A REVISION OF THE GENUS LABICHEA Gaudich. ex DC. (CAESALPINIACEAE)

by

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ABSTRACT

Ross, J. H. A revision of the genus *Labichea* Gaudich. ex DC. (Caesalpiniaceae). *Muelleria* 6 (1):23-49 (1985). — The endemic Australian genus *Labichea* Gaudich. ex DC. is revised. Fourteen species are recognized of which *L. deserticola, L. obtrullata, L. saxicola* and *L. stellata* are described as new. Infraspecific taxa are recognized formally in *L. lanceolata* and *L. teretifolia*. Descriptions, a key to the identification of species, illustrations and distribution maps are provided, together with notes on ecological preferences and relationships.

INTRODUCTION

Labichea, a genus of 14 species, was described by A. P. De Candolle, Prodr. 2:507 (1825), who adopted the name proposed by C. Gaudichaud to commemorate J. J. Labiche, an officer of the French ship Uranie who accompanied Freycinet and died during the latter's voyage around the world from 1817-20. The genus has a disjunct distribution in Australia occurring in Western Australia from the vicinity of the Ashburton River southwards and south-eastwards to Israelite Bay with outliers as far afield as the Victoria Desert, in the northern portion of the Northern Territory, and in northern, eastern and south-eastern Queensland (see Fig. 1).

Fig. 1. The distribution of the genus *Labichea*.

Labichea is a member of the tribe Cassieae Bronn and, together with *Petalostylis* R. Br., constitutes the sub-tribe Labicheinae Irwin & Barneby. *Petalostylis* differs from *Labichea* in having the style dilated into a boat-shaped petaloid limb, 3 fertile stamens opposed to the 3 abaxial sepals and 2 staminodes opposed to the adaxial sepals.

The Labicheinae have imparipinnate, digitate or unifoliolate leaves, distichous phyllotaxy, functionally 2 or 3-merous androecia and seed funicles dilated into a conspicuous aril. In contrast *Cassia* L. and segregate genera (sub-tribe Cassiinae) have the leaves paripinnate, phyllotaxy mostly spiral (when distichous the androecium is 5-10-merous) and the funicle either filiform or deltately dilated but without an aril.

Members of *Labichea* are xeromorphic shrubs or subshrubs. The leaves are either imparipinnate or by reduction digitate or unifoliolate and the leaflets are usually distinctly pungent-pointed. The pubescence is often of mixed hair types and sometimes varies on different parts of the same plant but at least some organs of each species bear distinctive short uncinate hairs. These uncinate hairs are either erect or they are bent shortly above their point of attachment and lie almost horizontal to the surface or are inclined at an angle of about 45°. The uncinate hairs form an understorey to longer spreading hairs, occur

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scattered in amongst appressed hairs or occur exclusively. Sometimes, especially on the upper leaflet surfaces, the uncinate hairs have bulbous bases which persist after the hairs have been shed and impart a scabrid texture to the surface. The pods of all species examined except *L. buettneriana* are clothed with a mixture of short erect uncinate hairs and scattered longer appressed or spreading hairs. Although uncinate hairs are a feature of *Labichea* species, they also occur sporadically on the pods of at least one species of *Petalostylis*.

The two anthers in *Labichea* flowers are either more or less uniform in size or one is almost twice as long as the other, a distinction which enables the species to be divided into two groups. However, although the species may be divided on this basis, the resulting groups are not homogeneous within themselves. The group with heteromorphic anthers, which contains the type of the genus, is the larger, more widely distributed and probably as a consequence the more heterogeneous group. The three species with imparipinnate leaves belong in this group, one in Western Australia and two in Queensland, but they do not appear to be at all closely allied. Of the others, *L. obtrullata* is clearly closely allied to *L. lanceolata* which in turn is allied to *L. nitida* and *L. saxicola*. Three of the four species in the group with uniform anthers show affinities but *L. punctata* with consistently unifoliolate leaves appears to occupy an isolated position.

The anthers dehisce by vertical slits or apical pores and some variation in the shape and position of the pores exists among the different species. In *L. stellata,* for example, the apices of the terminal pores diverge slightly on opening whereas in other species the pores are more or less V-shaped.

The pods and/or seeds of several species are unknown. Where known, the pods and seeds are relatively uniform except in *L. buettneriana* where the pods lack the characteristic uncinate hairs.

TAXONOMY

Labichea Gaudich. ex DC., Prodr. 2:507 (1825); Gaudich. in Freycinet, Voy. Uranie 485, t. 112 (1830); G. Don, Gen. Syst. 2:433 (1832); Benth., Fl. Austral. 2:292 (1864); Benth. in Benth. & Hook. f., Gen. Pl. 1:573 (1865); Taub. in Engl. & Prantl, Nat. Pflanzenfam. 3, 3:156 (1892); Hutch., Gen. Flow. Pl. 1:231 (1964); Irwin & Barneby in R. M. Polhill & P. H. Raven (eds), Advances in Legume Systematics 1:106 (1981). TYPE: *L. cassioides* Gaudich. ex DC.

Shrubs or subshrubs. Leaves imparipinnate or by reduction digitate or unifoliolate; leaflets usually coriaceous, sometimes rigid, mostly pungent-pointed. *Stipules* usually small and soon deciduous, sometimes persisting. *Inflorescence* a loose axillary raceme, sometimes few-flowered; pedicels ebracteolate. *Flowers* bisexual, irregular; bracts deciduous. *Sepals* 4 or 5, imbricate, the outer 2 larger, concave, the outermost sometimes slightly cucullate apically, the inner 2(3) more petal-like. *Petals* 4 or 5, yellow, the adaxial one usually with a red basal flare, the vexillar one interior in bud, unequal. *Stamens* 2, opposed to the 2 abaxial sepals; filaments much shorter than the anthers; anthers either more or less the same size or one almost twice as long as the other, dehiscing by vertical slits or apical pores. *Ovary* usually shortly stipitate, free, mostly 2-3-ovulate; style filiform; stigma terminal, small. *Pods* mostly oblong-elliptic, compressed, dehiscing along both sutures and the valves coiling. *Seeds* slightly compressed, the funicle dilated into a conspicuous globular aril which sometimes partly envelopes the base of the seed.

KEY TO SPECIES

1. Anthers unequal, one very much longer than the other:
   2. Leaves imparipinnately 3-17-foliolate:
      3. Lower surface of leaflets glabrous or with scattered appressed hairs, especially on the midrib ..... 1. *L. cassioides*
      3. Lower surface of leaflets densely clothed with appressed or spreading hairs:
         4. Leaf-rhachis 0.5-1.5 cm long; the terminal leaflet of each leaf disproportionately larger than the others; leaflets narrowed apically to a distinct pungent point ..... 2. *L. brassii*
         4. Leaf-rhachis (0.5)1.5-9 cm long; the terminal leaflet of each leaf larger than the others but not disproportionately so; leaflets rounded or obtuse apically and emarginate or slightly apiculate ..... 3. *L. buettneriana*
   2. Leaves unifoliolate or digitately 3-9-foliolate:

5. Leaves unifoliolate or consistently 3-foliolate:
   6. Leaves unifoliolate ..... 9. *L. lanceolata*
   6. Leaves 3-foliolate:
      7. Central leaflet of each leaf usually > 3 cm long and disproportionately longer than the lateral leaflets:
         8. Lateral leaflets elliptic or elliptic-oblong; the leaves sessile or almost so ..... 9. *L. lanceolata*
         8. Lateral leaflets usually ± very broadly obtrullate or obreniform, rarely narrow-elliptic; leaves distinctly petiolate ..... 10. *L. obtrullata*
      7. Central leaflet of each leaf up to 2.5 cm long including the pungent tip, longer than the lateral leaflets but not disproportionately so ..... 6. *L. deserticola*
5. Leaves digitately (3)5-9-foliolate, occasional 3-foliolate leaves accompanied by leaves with 5-9 leaflets:
   9. Sepals 4:
      10. Upper leaflet surface usually glabrous, lower surface glabrous or with scattered appressed or erect uncinate hairs ..... 9. *L. lanceolata*
      10. Upper leaflet surface with numerous erect uncinate hairs, lower surface densely clothed with appressed white hairs up to 2 mm long, especially on the midrib ..... 7. *L. saxicola*
   9. Sepals 5:
      11. Leaflets compressed and ± subterete or linear- to narrow elliptic-oblong, up to 2 mm wide, the margins tightly recurved to conceal the lower surface except for the midrib or portion of the midrib or sometimes portion of the lower surface visible also ..... 4. *L. teretifolia*
      11. Leaflets not as above:
         12. Leaflets rigid, folded lengthwise and deeply channelled above or U-shaped in section, sometimes almost conduplicate, 1-3.5 mm wide ..... 5. *L. eremaea*
         12. Leaflets not as above:
            13. Upper leaflet surface sparingly to densely clothed with uncinate hairs; central leaflet of each leaf usually distinctly obovate-oblong ..... 8. *L. nitida*
            13. Upper leaflet surface usually glabrous; central leaflet of each leaf elliptic- or narrow-oblong ..... 9. *L. lanceolata*
1. Anthers more or less the same size:
   14. Leaves unifoliolate ..... 14. *L. punctata*
   14. Leaves digitately or subdigitately 3-7-foliolate:
      15. Leaves 3-5-foliolate, the central leaflet of each leaf disproportionately longer than the others, 2.5-9 cm long including the pungent tip ..... 11. *L. rupestris*
      15. Leaves 5(7)-foliolate, the central leaflet of each leaf not disproportionately longer than the others, up to 3 cm long including the pungent tip:
         16. Sepals 4; young branchlets usually densely clothed with spreading hairs up to 0.6 mm long; petioles up to 1.5 mm long; lower leaflet surface usually with scattered appressed hairs especially on the midrib ..... 12. *L. digitata*
         16. Sepals 5; young branchlets clothed with spreading hairs up to 1.5 mm long and scattered shorter erect uncinate hairs; petioles 1-5 mm long; lower leaflet surface glabrous except for scattered hairs up to 1.75 mm long on the midrib and sometimes on the margins ..... 13. *L. stellata*

1. **Labichea cassioides** Gaudich. ex DC., Prodr. 2:507 (1825); Gaudich. in Freycinet, Voy. Uranie 485, t. 112 (1830); Benth., Fl. Austral. 2:292 (1864). TYPE: Western Australia, "baie des chiens marins" (Shark Bay), *C. Gaudichaud s.n.* (P, here selected as lecto.; K, ? isolecto.).

L. tephrosiifolia Meissner, Bot. Zeitung 13:12 (1855). TYPE: Western Australia, between Moore and Murchison Rivers, *Drummond* Coll. VI, No. 7 (BM, NY, W, iso.).

Subshrub or shrub to 2 m high, often wider than high, occasionally semi-scandent, young branchlets glabrous or sparingly clothed with appressed and scattered erect uncinate hairs. *Leaves* imparipinnate, 3-17-foliolate, the lowest pair of leaflets inserted on the rhachis at or near its attachment to the branch, the terminal leaflet largest; rhachis 0.15-2(4.8) cm long, glabrous or sparingly clothed with uncinate and/or appressed hairs; leaflets narrow-oblong to obovate- or elliptic-oblong, 1-3.5 cm long including the pungent apex, 0.15-1 cm wide, petiolulate, upper surface with short tubercular-based uncinate hairs especially when young, the raised bases persisting, lower surface glabrous or with scattered appressed hairs especially on the midrib. *Stipules* narrow-ovate, 1.5-2.5 x 1-1.25 mm, pubescent, soon deciduous. *Racemes* 2-10-flowered, often as long as or longer than the leaves, subglabrous to sparingly clothed with appressed and scattered uncinate hairs; bracts ovate, 2-2.5 x 1.25-1.75 mm, sparingly appressed-pubescent. *Pedicels* 4-8 mm long, sparingly clothed with appressed and scattered uncinate hairs. *Sepals* 5, the 2 outer 9.5-11 x 3.5-4.7 mm, sparingly clothed with appressed and scattered uncinate hairs, the 3 inner 8.5-10.5 x 2.5-4.5 mm. *Petals* 4, 8.5-12 x 8-13 mm. *Stamens* unequal, one anther much longer than the other; filaments up to 0.5 mm long; short anther 4.5-6 mm long, long anther 8-9 mm long. *Ovary* up to 3.5 mm long, 2-ovulate, villous. *Pods* obliquely oblong-elliptic, 2.2-3 x 0.9-1 cm,

narrowed to an acute beak apically, clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seeds* (immature) elliptic-oblong, ± 6.5 x 4 mm.

Occurs on the northern sandplain and the north-west coast of Western Australia from Cervantes in the south to the Ashburton River in the north (Fig. 2). A discontinuity apparently separates the populations in the south from those in the north. Found on sand, limestone or loam and often in association with *Acacia, Triodia* or *Spinifex* spp.

Fig. 2. The known distributions of *Labichea cassioides, L. brassii* and *L. buettneriana*.

REPRESENTATIVE SPECIMENS (total number examined, 24):

Western Australia — Cockleshell Gully, ii.1940, *C. A. Gardner s.n.* (PERTH). 5 km S. of Kalbarri National Park boundary on coast road to Gregory, 27.ix.1982., *M. G. Corrick 8267* (MEL 621523). NE. of Tamala Station H.S., 26.viii.1969, *A. S. George 9564* (PERTH). Between Monkey Mia and Denham, 9.x.1973, *J. S. Beard 6777* (PERTH). 32 km S. of Learmonth, 5.viii.1967, *A. S. George 9173* (PERTH). Nanutarra, Ashburton River, 4.x.1905, *A. Morrison* (PERTH).

NOTES:

The plate (t. 112) accompanying Gaudichaud's description, in Freycinet, Voy. Uranie 485 (1830), illustrates a flowering specimen with young pods and a detached pod and seeds indicating that Gaudichaud had before him flowering and fruiting material. Through the courtesy of the Director, Muséum National d'Histoire Naturelle, Paris, I have examined type material of *L. cassioides* which consisted of a flowering specimen. The whereabouts of the fruiting material illustrated in t. 112 is unknown. The seeds illustrated lack a swollen funicle. I have not seen mature seed of *L. cassioides* but a swollen funicle was present in immature seed examined, suggesting that either the artist was in error or that the detached pod and seeds illustrated were not those of *L. cassioides*. In order to obviate any uncertainty, the flowering specimen in P collected by Gaudichaud at "baie des chiens marins" is here selected as the lectotype of *L. cassioides*. A small fragment in K is possibly an isolectotype.

L. cassioides is a polymorphic species within which a considerable range of variation in leaflet number and size is encountered. The extremes, for example *Keighery 4593* (KINGS PARK) from near Cervantes with numerous pairs of narrow leaflets and *George 9564* from Tamala Station with few broad leaflets, look quite different but they are linked by inter-

mediates so that when the entire range of variation is inspected it is difficult to divide it satisfactorily. There is an inconsistent tendency for leaflet number to be correlated with leaflet width and, to a lesser extent, with shape and geographical distribution. Specimens with numerous (mostly 7-17) narrow (mostly up to 2.75 mm wide) leaflets tend to occupy the southern part of the distributional range of the species (vicinity of Cervantes to Cockleshell Gully) and specimens with fewer (3-7) leaflets more than 2.75 mm wide occur from the vicinity of Port Gregory northwards. No specimens with few large leaflets have been recorded south of Port Gregory.

Flower size also varies but less so than the leaflets. Specimens in the north with few large leaflets tend to have larger flowers but there is no discontinuity in flower size between the northern and southern populations.

The name *L. tephrosiifolia* Meissner applies to the southern populations. Meissner based his description on Drummond Coll. VI, No. 7, collected between the Moore and Murchison Rivers. Drummond specimens in BM and W labelled "6th coll. No. 7" and "Ser. 6 No. 7" respectively represent type material, and the fragment in NY is labelled as having been taken from Herb. Shuttleworth (BM). Drummond collections in K and MEL labelled "No. 7" and in LD labelled "3rd coll. No. 7" are a good match of the Drummond collections in BM and W and it is probable that the K and MEL sheets, at least, also represent type material.

Detailed field studies will indicate whether there is a satisfactory means of dividing the range of variation and whether or not formal recognition of infraspecific taxa within *L. cassioides* is desirable.

The imparipinnate leaves distinguish *L. cassioides* from the other Western Australian species.

2. **Labichea brassii** C. T. White & Francis, Proc. Roy. Soc. Queensland 41:140, t. IX (1929). TYPE: Queensland, Forest Home Station, Gilbert River, vii.1928, *L. Brass s.n.* (BRI 7968, here selected as lecto.; K, fragm.; CANB 24128 ? isolecto.)

L. nitida Benth. var. *pinnata* F. Muell., Fragm. x:7 (1876). TYPE: Queensland, Gilbert River, *R. Daintree* (MEL 647675, here selected as lecto.).

Shrub up to 3 m high; young branchlets densely clothed with short erect or uncinate hairs and scattered longer hairs up to 2 mm long. *Leaves* imparipinnate, (3)5-7 (9)-foliolate, the leaflets usually progressively larger from the base of the rhachis upwards, the terminal leaflet disproportionately larger than the others, the lowest pair inserted on the rhachis at or near its attachment to the branch and often asymmetric basally; rhachis 0.5-1.5 cm long, clothed like the young branchlets; leaflets elliptic, elliptic-oblong or ovate, margins revolute and sometimes slightly undulate, upper surface with numerous short erect bulbous-based uncinate hairs and scattered longer hairs, the raised bases persisting after the hairs have been shed, lower surface densely clothed with short and long erect, appressed or spreading hairs up to 2 mm long, petiolules densely clothed like the young branchlets; lateral leaflets 0.8-2.5 cm long including a pungent tip up to 3 mm long, 0.275-1.1 cm wide; terminal leaflet 1.8-4.6 cm long including a pungent tip up to 3 mm long, 0.5-1.7 cm wide. *Stipules* ovate, up to 3.5 x 1.5 mm, clothed with short and long appressed hairs, deciduous. *Racemes* (2)6-10-flowered, densely clothed with short and long spreading white hairs up to 2 mm long; bracts ovate, up to 3.5 x 1 mm, deciduous. *Pedicels* 4-10 mm long, densely clothed with short erect or uncinate hairs and scattered longer hairs. *Sepals* 5, the 2 outer 8-10 x 2.5-4 mm, acute apically, densely clothed with short erect and longer mainly spreading hairs up to 2 mm long, inner 3 sepals 5.8-9 x 2-3.6 mm. *Petals* 4, 8-12 x 3.8-8.5 mm. *Stamens* unequal, one anther very much longer than the other, filaments 0.5-0.9 mm long; short anther 3.5-4 mm long, long anther 6.5-7.5 mm long. *Ovary* 3-4 mm long, 2-ovulate, densely villous. *Pod* obliquely elliptic-oblong, narrowed to an acute beak, 2.2-2.6 x 1.0-1.1 cm, clothed with short erect uncinate hairs and longer scattered appressed or spreading hairs. *Seeds* 4-5 x 3.5-4.5 mm.

Known from two collections from the Gilbert River in northern Queensland, one collected prior to 1876 and the other in 1928, and three from Mt Mulligan (Fig. 2). Recorded growing along creek and river beds.

SPECIMENS EXAMINED (total number, 5):

Queensland — Mt Mulligan, 27.ii.1934, *Flecker s.n.* (BRI 285057). Mt Mulligan, 0.5 km S. of mine site along pipeline leading to the falls on Richards Creek, 11.iv.1984, *J. R. Clarkson 5255* (MEL 665928). Mt Mulligan, southern plateau, 12.iv.1984, *J. R. Clarkson 5302* (MEL 665927).

NOTES:

A discontinuity separates the Mt Mulligan and Gilbert River populations. The Mt Mulligan specimens differ slightly from typical *L. brassii* in leaflet shape and size. The leaflets in the former are consistently narrow-elliptic, usually lack undulate margins, and are slightly smaller, the lateral leaflets being 0.275-0.7 cm wide (0.4-1.1 cm wide in typical *L. brassii*) and the terminal leaflets 1.8-4 x 0.5-0.9 cm as opposed to 3.5-4.6 x 1.1-1.7 cm. In addition, the pubescence of the young branchlets is slightly denser and the lower leaflet surfaces are more densely pubescent than in typical *L. brassii.*

L. brassii is a little known species whose affinities are not clear but it does not appear to be closely allied to *L. buettneriana,* the only other Queensland species with imparipinnate leaves.

3. **Labichea buettneriana** F. Muell., Chem. & Druggist Australas. Suppl. 5: 12 (June 1882); Fragm. 12:18 (Dec. 1882). TYPE: Queensland, Endeavour River, 1882, *Persieh 395* (MEL 647677, here selected as lecto.).

Shrub to 1.7 m high, young branchlets densely clothed with appressed to spreading hairs (not uncinate) up to 0.5 mm long. *Leaves* imparipinnate, (3)5-11(13)-foliolate, the leaflets usually progressively larger from the base of the rhachis upwards and the terminal leaflet largest, the lowest pair inserted on the rhachis at or just above its attachment to the branch; rhachis (0.5)1.5-9 cm long, clothed like the young branchlets; leaflets opposite or sub-opposite, oval, elliptic, elliptic-oblong or oblong (rarely obovate-oblong), 0.8-4.3 cm long, 0.5-2.2 cm wide, the apex obtuse or rounded and emarginate or slightly apiculate, margins sometimes slightly undulate, discolorous, upper surface with short erect uncinate hairs and scattered longer appressed or slightly spreading hairs; lower surface densely clothed with appressed or slightly spreading hairs; petiolules 1.5-3.5 mm long, clothed like the young branchlets. *Stipules* narrow-ovate, 2-3.5 x 1-1.5 mm, pubescent, deciduous. *Racemes* 9-22-flowered, up to 10 cm long and longer than the leaves, densely clothed with short and long appressed or slightly spreading hairs; bracts ovate, 4.0-6.5 x 3-3.5 mm, brown, conspicuous, densely pubescent outside except towards the margins, deciduous. *Pedicels* 3-7 mm long, densely pubescent like the raceme. *Sepals* 4 or 5, the 2 outer 11-14 x 4.5-7 mm, the outermost ± cucullate, densely clothed with appressed to slightly ascending hairs, inner 2 or 3 sepals 10-13.5 x 3.2-6.2 mm. *Petals* 4, 10-16 x 7-11.5 mm. *Stamens* unequal, one anther very much longer than the other, filaments 0.6-1 mm long; short anther 4.5-5.3 mm long, long anther 9-10.5 mm long. *Ovary* 3-4 mm long, 2-ovulate, densely villous. *Pods* obliquely elliptic-oblong, 2.8-3.8 x 1.49-1.7 cm, narrowed to an acute apical beak, densely clothed with short erect (not uncinate) and scattered longer hairs. Seeds 6.5-7.5 x 5-5.5 mm.

Confined to north-eastern Queensland from just north of Cooktown to Cape Flattery (Fig. 2). Occurs in low lying sandy areas often among the coastal sand dunes.

REPRESENTATIVE SPECIMENS (total number examined, 8):

Queensland — Cape Flattery, 20.vi.1975, *P. Sharpe 1529* (BRI 198332). Between McIvor River and Cape Flattery, 22.xi.1972, *A. Dockrill 623* (QRS 31337). Near Cape Bedford, 14.vi.1968, *L. Pedley 2625* (BRI 111894). S. of Cape Bedford, 30.vii.1980, *J. R. Clarkson 3301* (BRI 268787, QRS 61968).

NOTES:

L. buettneriana is distinguished by its imparipinnate leaves, leaflets with obtuse or rounded apices which are emarginate or only slightly apiculate, long racemes which exceed the leaves, and broad pods. The obtuse, emarginate or only slightly apiculate leaflet apices are in contrast to the distinctly pungent apices found in other species, and the pods differ from those of other species examined in that the short erect hairs are not uncinate. In *L. buettneriana* uncinate hairs are found only on the upper surfaces of the leaflets.

The seeds are reported (Dockrill 623) to be edible either raw or cooked.

The identity of *L. S. Smith 11145* (BRI 142759), a sterile specimen from the Hoop Pine area near McIvor, is not clear but it possibly represents a local expression of *L. buettneriana*. It differs from other material of *L. buettneriana* examined in having larger leaves and larger (3.5-7 cm long) oblong-elliptic leaflets. More material of this variant, especially fertile material, is desired.

4. **Labichea teretifolia** C. Gardner, J. & Proc. Roy. Soc. Western Australia 27: 175 (1942). TYPE: Western Australia, 48 km (30 miles) N. of Murchison River, 29.viii.1931, *C. A. Gardner 2575* (PERTH, holo.).

Shrub to 1.5 m high, often wider than high, young branchlets densely clothed with appressed to spreading or crinkly hairs (not uncinate). *Leaves* digitately 5-7(-9)-foliolate, the leaflets of each leaf approximately the same size; leaflets sessile, rigid, either compressed, ± subterete and 0.6-1.1 mm wide, or linear- to narrow elliptic-oblong and 0.8-2 mm wide, the margins tightly recurved to conceal all but the midrib or part of the midrib below or portion of the lower surface visible, 0.8-2.2 cm long including the pungent tip, upper surface either with appressed or slightly spreading hairs and uncinate hairs, uncinate hairs only, or scabrid once the hairs have been shed, midrib and lower surface (when visible) usually sparingly to densely clothed with appressed or slightly spreading hairs. *Stipules* broadly ovate, 1.5-5.5 x 1.5-4.5 mm, scarious, usually densely appressed-pubescent except sometimes towards the margins, soon deciduous or persisting for some time. *Racemes* 3-7-flowered, densely clothed with appressed to spreading golden-brown or silvery-white hairs, each flower with an outer broadly ovate scarious bract 1.5-7.5 x 1.5-5 mm and two inner narrowly ovate or elliptic-oblong bracts 1.5-6 x 1-1.5 mm, the bracts pubescent outside except towards the margins. *Pedicels* 2-5 mm long, densely clothed with appressed to spreading golden-brown or silvery-white hairs. *Sepals* 5 (rarely 4 by the lateral fusion of 2 or 6), the 2 outer 5.8-11 x 2-4 mm, with scattered erect uncinate hairs and longer appressed or spreading golden-brown or silvery-white hairs, inner 3 sepals 4.3-9 x 1.3-3.5 mm. *Petals* 4 (rarely 5), (3.5)4.5-10 x 2.6-9.6 mm. *Stamens* unequal, one anther much longer than the other, filaments 0.5-1 mm long; short anther 3.1-5.2 mm long, long anther 4.3-7 mm long. *Ovary* 2.5-3.5 mm long, 2-ovulate, densely villous. *Pods* obliquely elliptic-oblong, elliptic or sometimes the apex somewhat falcate, 1.4-2.7 x 0.5-0.8 cm, clothed with short erect uncinate and scattered longer appressed hairs. *Seeds* 4.4-4.6 x 3.5-3.8 mm.

L. teretifolia has a restricted distribution within the northern portion of Irwin Botanical District of the South West Botanical Province of Western Australia as defined by Beard (1980) occurring from the vicinity of Wannoo southwards to near Geraldton and inland to Mullewa (Fig. 3).

L. teretifolia is a variable species, the variation falling into two groups. The extremes of each group look quite different suggesting that they are referrable to separate species but an examination of the range of variation indicates that this is not the case. The two groups may be differentiated on stipule size and, to a lesser extent, on the colour and nature of the indumentum on the 2 outer sepals. These differences, coupled with other differential tendencies and somewhat different distributional ranges and ecological preferences, suggest that formal recognition of the groups is desirable and they are accorded subspecific status.

KEY TO SUBSPECIES

Stipules 1.5-2.5 mm long, 1.5-2 mm wide; indumentum on 2 outer sepals mostly golden-brown, the non-uncinate hairs usually ± appressed ..... subsp. *teretifolia*

Stipules 3-5.5 mm long, 2-4.5 mm wide; indumentum on 2 outer sepals silvery-white, the hairs usually spreading somewhat ..... subsp. *grandistipulata*

L. teretifolia subsp. **teretifolia**

Stipules 1.5-2.5 mm long, 1.5-2 mm wide; indumentum on the 2 outer sepals mostly golden-brown and the non-uncinate hairs ± appressed.

Occurs in the northern sandplain from about 20 km south of Wannoo southwards to

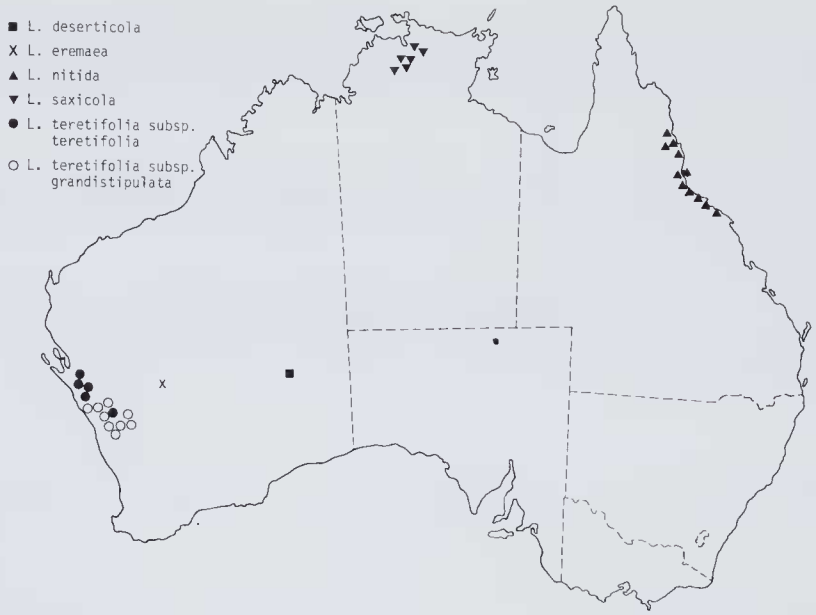

Fig. 3. The known distributions of *Labichea deserticola*, *L. eremaea*, *L. nitida*, *L. saxicola* and *L. teretifolia*.

the Murchison River; there is a solitary record (Blackall 4812) from south of the Murchison near Yuna. Grows in sandy soil in patches of tall scrub and thickets.

REPRESENTATIVE SPECIMENS (total number examined, 10):

Western Australia — 25.6 km S. of Wannoo Roadhouse, viii.1967, *C. H. Gittens 1548* (BRI 86452, NSW 85182, PERTH). Proposed Toolonga Nature Reserve, 22.ix.1972, *A. Burbidge 65* (PERTH). 67 km N. of Murchison River on North West Coastal Highway, 30.viii.1982, *J. H. Ross 2706* (MEL 104558, PERTH). 42 km N. of Murchison River on North West Coastal Highway, 30.viii.1982, *J. H. Ross 2710* (MEL 104559, PERTH). Between Yuna and Dartmoor, 20.ix.1940, *W. E. Blackall 4812* (PERTH).

NOTES:

Subsp. *teretifolia* is a relatively uniform taxon. In addition to differences in stipule size and sepal pubescence, other inconsistent differential tendencies distinguish the two subspecies. In subsp. *teretifolia* the leaves tend to be more congested on the branches (in subsp. *grandistipulata* the internodes are often much longer which gives specimens a somewhat different facies), the leaflets are always compressed and ± subterete (similar leaflets occur in subsp. *grandistipulata* but in addition a much wider range of variation in width and shape is present), and the flowers tend to be smaller although there is continuous variation in flower size from one subspecies to the other. Sepal length and width in subsp. *teretifolia* are 4.3-7.5(9.6) x 1.6-3 mm respectively as opposed to (6.1)7-11 x (1.6)2.5-4.2 mm in subsp. *grandistipulata*, and petal length and width are (3.5)4.5-6.5(8.3) x 2.6-5.5 mm respectively in subsp. *teretifolia* and (5.8)6.2-10 x (2.7)4.4-9.6 mm in subsp. *grandistipulata*.

Some variation in floral structure was observed. In Gittens 1548 some flowers had a fifth petal much reduced in size (± 3.5 x 1.1 mm), whereas in Burbidge 65 flowers were found with three stamens, two short ones of similar length and a longer one. In other flowers of Burbidge 65 the two stamens were accompanied by a sterile staminode, and in one flower dissected a linear appendage was present in addition to the two stamens and staminode.

There is a suggestion that pod size and shape are slightly different in the two subspecies but insufficient specimens with mature pods are available to establish whether the apparent differences are real. The pods in subsp. *grandistipulata* tend to be longer and are often somewhat falcate apically but pod size and shape need further investigation.

For some inexplicable reason Gardner recorded the leaves as digitately 3-foliolate even although some of the leaves on the type collection are clearly 5-foliolate.

L. teretifolia subsp. **grandistipulata** J. H. Ross, subsp. nov.

Subspecies nova a subspecie typica stipulis 3-5.5 mm longis, 2-4.5 mm latis et sepalis 2 exterioribus pilis argenteo-albis plerumque aliquantum patentibus, differt.

TYPE: Western Australia, between Yuna and Mullewa Road, 14.viii.1965, *A. M. Ashby 1581* (AD 96550426 holo., MEL 104565, PERTH, iso.).

Stipules 3-5.5 mm long, 2-4.5 mm wide; indumentum on 2 outer sepals silvery-white and the hairs usually spreading somewhat.

Occurs mainly south of the Murchison River to near Geraldton and inland to Mullewa. The only record from north of the Murchison River is *Ashby 2184* (AD, PERTH) collected "between Murchison sandplain and Billabong". Reported growing in loam, gravel, clay and sand and apparently a coloniser of disturbed sites such as disused gravel pits and road cuttings. It appears to have slightly different ecological preferences to subsp. *teretifolia* and a wider ecological tolerance.

REPRESENTATIVE SPECIMENS (total number examined, 25):

Western Australia — 1.5 km W. of Ajana on road to Kalbarri, 31.viii.1982, *J. H. Ross 2720* (MEL 104561, PERTH). 5 km S. of the turn-off to Kalbarri on the North West Coastal Highway, 31.viii.1982, *J. H. Ross 2723* (MEL 104563). East Yuna Reserve, 17.ix.1967, *A. C. Burns 69* (PERTH). 1.6 km S. of Eradu, 29.ix.1966, *E. M. Scrymgeour 1443* (PERTH). 15.5 km W. of Mullewa on Geraldton-Mullewa Rd., 31.viii.1982, *J. H. Ross 2725* (MEL 104560, PERTH).

NOTES:

Subsp. *grandistipulata* is a more heterogeneous taxon than subsp. *teretifolia,* especially in leaflet size and shape. In typical subsp. *grandistipulata* the leaflets are linear-oblong to narrow elliptic-oblong and often the margins are less tightly recurved than in subsp. *teretifolia* so that more of the midrib or sometimes even portion of the lower leaflet surface is visible. The different leaflet shape, sometimes coupled with slightly longer internodes, tends to give specimens a somewhat different facies. The upper leaflet surfaces are often glabrous or with only uncinate hairs unlike in subsp. *teretifolia* where long appressed hairs are often present in addition to the uncinate hairs.

The large stipules on the young shoots are very distinctive, whence the subspecific epithet.

5. **Labichea eremaea** C. Gardner, J. & Proc. Roy. Soc. Western Australia 27:175 (1942). TYPE: Western Australia, near Anketell, 27.2 km (17 miles) W. of Sandstone, 17.viii.1931, *C. A. Gardner 2505* (PERTH, holo., PERTH, iso.).

Compact rigid *shrub* to 0.8 m high, often wider than high, young branchlets densely clothed with spreading hairs. *Leaves* digitately 5-7-foliolate, sessile, the central leaflet largest; petiolules 0.5-1.25 mm long; leaflets narrow-elliptic or narrow-obovate-oblong, folded lengthwise and deeply channelled above or U-shaped in section, sometimes almost conduplicate, rigid, lower surface sparingly to densely clothed with uncinate and/or straight hairs; central leaflet 1.2-2.8 cm long including the pungent tip up to 0.3 cm long, 0.1-0.35 cm wide; lateral leaflets 0.7-2.1 cm long including the pungent tip, 0.1-0.2 cm wide. *Stipules* narrow-triangular or subulate, 1.5-5 mm long, 0.4-1 mm wide, densely pubescent, persistent. *Flowers* mostly in pairs, shorter than the leaves. *Pedicels* up to 4 mm long, densely clothed with ± spreading hairs; bracts ovate, 2-3.5 x 1.5-2 mm, with spreading hairs, deciduous. *Sepals* 5, the 2 outer 7.8-8.5 x 2.6-3.5 mm, acute apically, densely clothed with spreading hairs, the 3 inner sepals 7-7.5 x 2-3 mm. *Petals* 4, 6-8 x 3.8-7.5 mm. *Stamens* unequal, one anther much longer than the other; filaments 0.5-0.8 mm long; short anther 3.6-3.9 mm long, long anther 5.5-6 mm long. *Ovary* ± 2.5 mm long, 2-ovulate, densely villous; style up to 3.5 mm long. *Pods* (only old twisted dehisced valves seen) obliquely oblong-elliptic, 1.4-1.8 x 0.8-1 cm, narrowed to an acute beak apically, densely clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seed* (only 1 seen) 4 x 3.5 mm, the testa marked with longitudinal rows of glandular dots.

L. eremaea has a restricted distribution in Western Australia between Anketell and Sandstone where it occurs in red sand with mallee *Eucalyptus* spp. and other Myrtaceous, Proteaceous and Solanaceous shrubs (Fig. 3).

SPECIMENS EXAMINED (total number, 5):

Western Australia — 16 km W. of Sandstone, 15.viii.1931, *C. A. Gardner & W. E. Blackall 474* (PERTH). ± 10 km from Anketell Station eastern boundary along road towards Sandstone, 22.viii.1982, *P. S. Short 1546* (MEL 629302). ± 1 km W. of Anketell Station eastern boundary along Sandstone — Mt Magnet Road, 22.viii.1982, *P. S. Short 1547* (MEL 629304).

NOTES:

Fruiting material is desired as only old pod valves have been collected.

6. **Labichea deserticola** J. H. Ross, sp. nov.

Species nova L. lanceolatae Benth. affinis, a qua foliis semper 3-foliolatis cum foliolis anguste ovatis vel ellipticis minoribus differt.

TYPE: Western Australia, Victoria Desert Camp 44, 27°44′ S, 126°33′ E, 7.ix.1891, *R. Helms s.n.* (AD 98223004, holo.; MEL 616545, NSW 150255-150257, iso.).

Shrub to 1 m high, young branchlets clothed with appressed or slightly spreading hairs. *Leaves* digitately 3-foliolate, the central leaflet largest: petiole up to 1.25 mm long, pubescent; leaflets narrow-ovate or elliptic, sessile, conspicuously reticulate, upper surface with scattered tubercular-based uncinate hairs, lower surface sparingly appressed-pubescent; central leaflet 1.6-2.3 cm long including the pungent tip up to 0.4 cm long, 0.4-0.6 cm wide; lateral leaflets 0.9-1.6 cm long including the pungent tip, 0.325-0.5 cm wide. *Stipules* narrow-triangular, up to 1.75 x 1.0 mm, ± appressed-pubescent, soon deciduous. *Racemes* mostly 3-5-flowered and longer than the leaves; bracts ovate, up to 3 x 2 mm, pubescent, deciduous. *Pedicels* 4-6 mm long, densely ± appressed-pubescent. *Sepals* 4, sparingly to densely appressed-pubescent, the 2 outer 10.5-11 x 3.4-3.8 mm, acute apically, the 2 inner sepals 8.5-10.6 x 2.8-3.5 mm. *Petals* 4, 8-10 x 3-5.2 mm. *Stamens* unequal, one anther nearly twice as long as the other, filaments up to 0.5 mm long; short anther ± 5 mm long, long anther 8.5-9 mm long. *Ovary* up to 4 mm long, 2-ovulate, villous. *Pod* (only 1 immature pod seen) elliptic-oblong, 1.8 x 0.8 cm, with short erect uncinate hairs and longer appressed hairs. *Seeds* unknown (Fig. 4).

Known only from the type collection from the Victoria Desert, Western Australia (Fig. 3). Ecological preferences and conservation status unknown.

NOTES:

Differs from *L. lanceolata* in having consistently 3-foliolate leaves, the central leaflet being only slightly larger than the two lateral ones and not markedly disproportionate, and in the leaflets being differently shaped and conspicuously reticulately veined.

More material, especially fruiting material, is desired.

7. **Labichea saxicola** J. H. Ross, sp. nov.

Species nova L. nitidae Benth. affinis, a qua pilis conspicuis adpressis ad 2 mm longis in foliolis paginae inferioris; pilis ad 2 mm longis in ramulis juvenilibus, petiolis, racemis, pedicellis, bracteis et sepalis; et floribus cum 4 sepalibus, differt.

TYPE: Northern Territory, Kakadu National Park, 1 km S. of Twin Falls, 23.v.1980, *L. A. Craven 5797* (CANB 309315, holo.; DNA 19919, MEL 616040, iso.).

Shrub to 2 m high, young branchlets densely clothed with a mixture of short erect or appressed hairs (not uncinate) and scattered appressed or spreading villous hairs up to 2 mm long. *Leaves* digitately (3)5(7)-foliolate, the central leaflet largest; leaflets elliptic, elliptic-oblong, oblong or obovate-oblong, discolorous, upper surface densely clothed with erect uncinate hairs, margins thickened and slightly revolute, lower surface densely clothed with appressed white hairs up to 2 mm long especially on the midrib (rarely a few uncinate hairs present), petiolules densely clothed with appressed or spreading hairs; central leaflet 1.7-4.3 cm long including a pungent tip up to 3 mm long, 0.6-1.3 cm wide; lateral leaflets 0.8-2.8

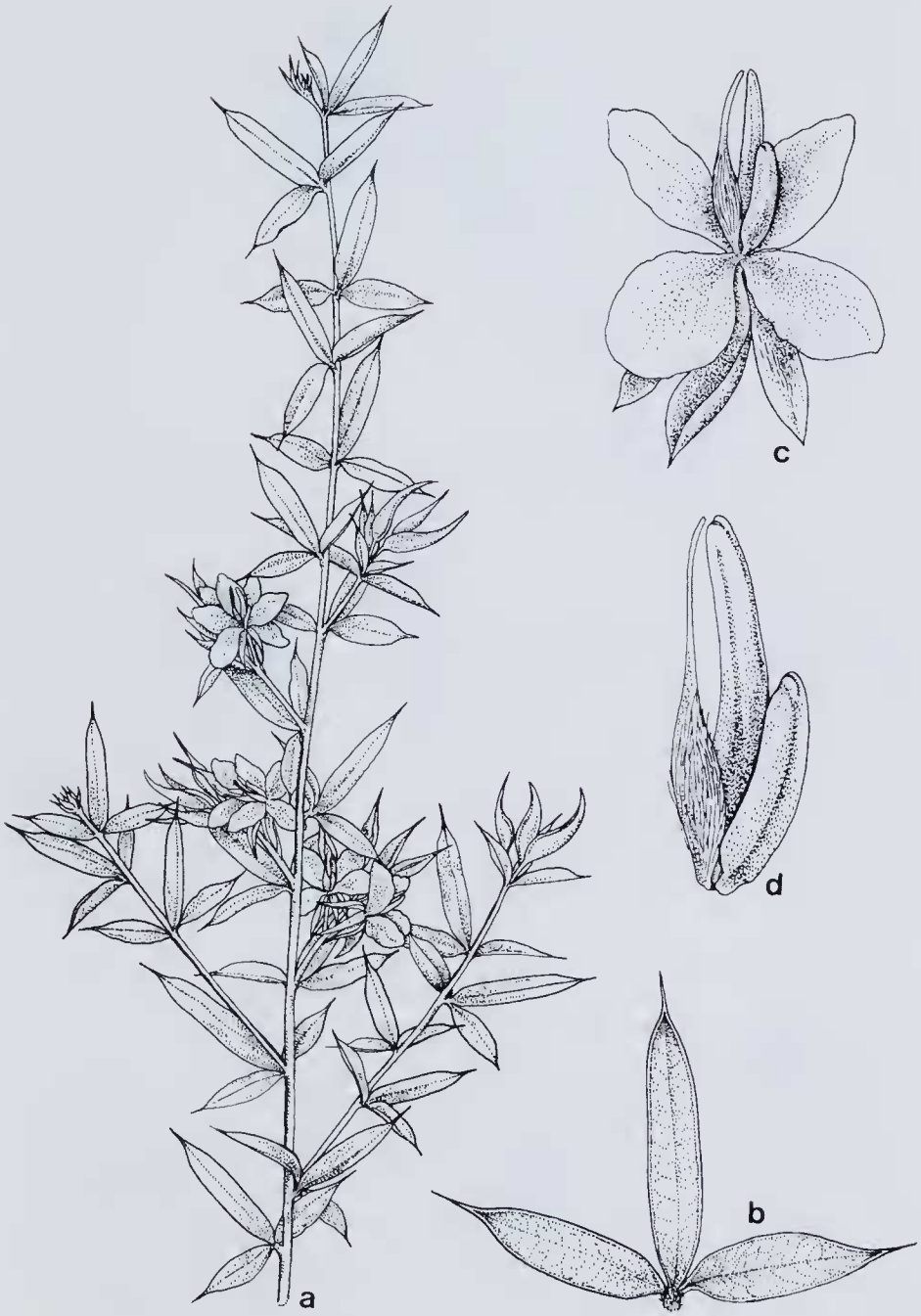

Fig. 4. *Labichea deserticola*. a — flowering twig, x 1. b — trifoliolate leaf, x 2. c — flower, x 3. d — stamens and gynoecium, x 6. All from *Helms s.n.* (AD 98223004).

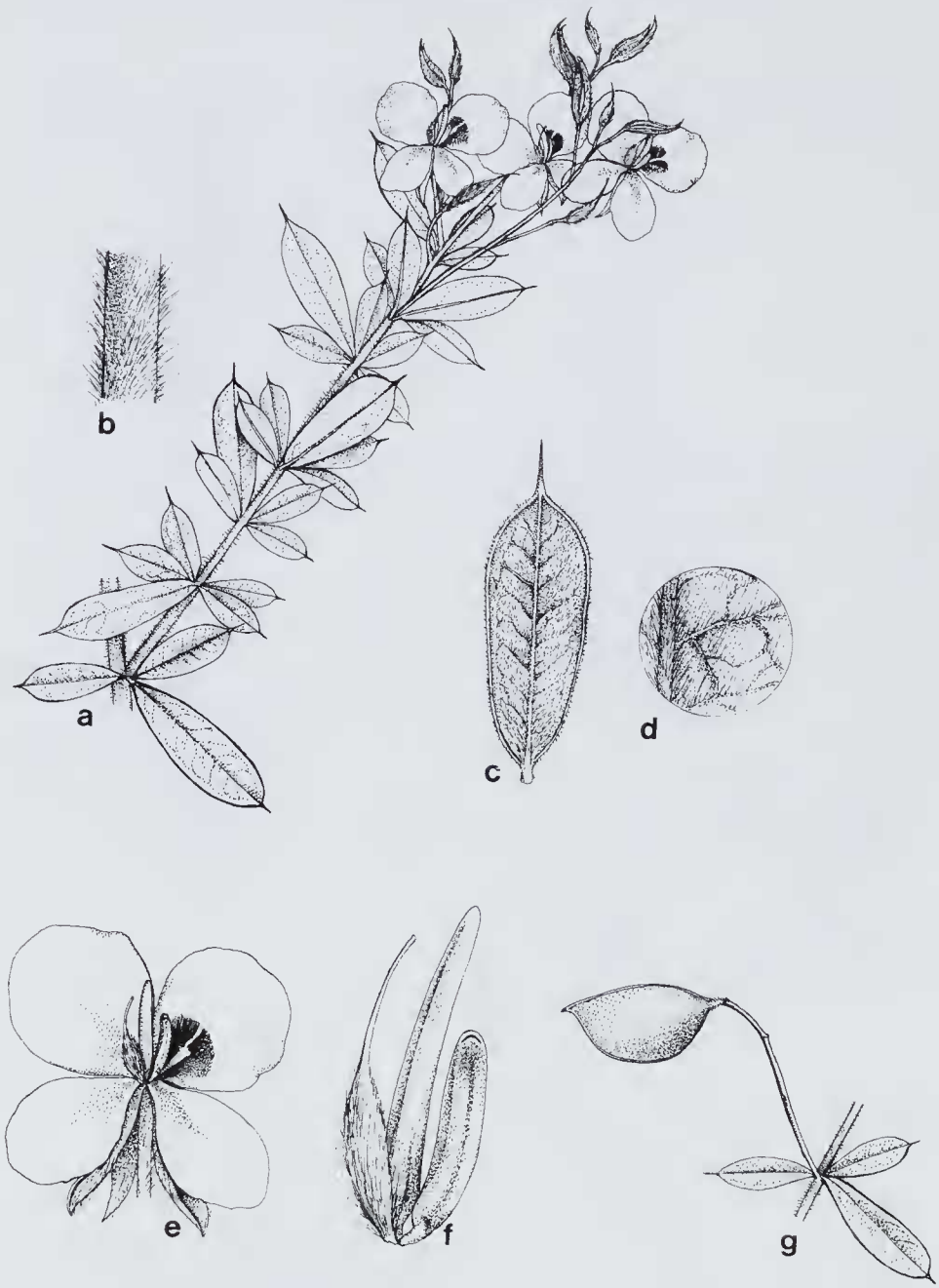

Fig. 5. *Labichea saxicola*. a — flowering twig, x 1. b — portion of young stem showing a mixture of short and longer spreading hairs, x 3. c — leaflet, x 2. d — portion of lower leaflet surface showing appressed hairs, x 6. e — flower, x 2. f — stamens and gynoecium, x 6. g — portion of fruiting twig, x 1. a — f from *L. A. Craven 5797* (CANB 309315); g from *N. Byrnes 1519* (BRI 130175).

cm long including a pungent tip up to 3 mm long, 0.4-0.9 cm wide. *Stipules* triangular, up to 2.5 x 1.5 mm, deciduous. *Racemes* 2-10-flowered, usually longer than the leaves, densely clothed with a mixture of short and long appressed or spreading hairs (none uncinate) up to 1.5 mm long; bracts narrow-ovate, up to 4 mm long, densely clothed with short and long appressed hairs, deciduous. *Pedicels* 4-10 mm long, densely clothed with a mixture of short (not uncinate) and long appressed and spreading hairs up to 1.2 mm long. *Sepals* 4, the 2 outer 9-11.5 x 3.7-4.5 mm, acute apically, densely clothed with a mixture of short erect uncinate hairs and longer appressed or spreading hairs up to 1.5 mm long, inner 2 sepals 6.5-10 x 2.4-4.5 mm. *Petals* 4, 9-12 x 5.6-10 mm. *Stamens* unequal, one anther much longer than the other, filaments 0.5-0.7 mm long; short anther 3.7-5 mm long, long anther 7.5-8.8 mm long. *Ovary* 3-4.5 mm long, 2(3)-ovulate, densely villous. *Pods* obliquely elliptic-oblong, narrowed to an acute beak, 2-2.6 x 0.9-1.1 cm, clothed with short erect uncinate hairs and longer scattered appressed or spreading hairs. *Seeds* 5-5.5 x 3.5-4.5 mm (Fig. 5).

Confined to the Northern Territory north of 14°S and usually associated with sandstone outcrops (Fig. 3).

Representative Specimens (total number examined, 10):

Northern Territory — 3.7 km N. of El Sharana, 25.i.1973, *Martensz & Schodde 558* (BRI 151831, CANB 239847, DNA 6119, NT 38367). 54.4 km SE. of Mudginbarry H.S., 20.ii.1973, *M. Lazarides 7796* (BRI 229937, CANB 265916, NT 52973). 6 km ESE. of Twin Falls, 24.v.1980, *M. Lazarides 8942* (CANB 295339, DNA 19920). Jim Jim Falls, 30.i.1981, *C. R. Dunlop 5685* (DNA 19073, MEL 609386).

Notes:

The flowers in *L. saxicola* typically have 4 sepals although in one flower on the DNA sheet of *Lazarides 8942* 5 sepals were present. The occurrence of 5 sepals is abnormal as the other flowers dissected on the DNA sheet had 4 sepals as did the sheet of *Lazarides 8942* in CANB and all of the flowers examined on the other specimens.

L. saxicola is allied to, and formerly was confused with, *L. nitida*. Apart from the difference in sepal number between *L. saxicola* and *L. nitida* and the tendency for the ovaries in *L. saxicola* to be 2(3)-ovulate and those in *L. nitida* (2)3-4-ovulate, the indumentum in the two species differs in density and in composition. The indumentum is denser on the young branchlets, lower surface of the leaflets, petiolules, racemes, pedicels, bracts and sepals in *L. saxicola* than in *L. nitida* and the appressed pubescence on the lower surface of the leaflets is particularly distinctive. The diagnostic differences between the two species are listed in Table 1. In addition, the species have different distributions and ecological preferences, *L. saxicola* usually being associated with sandstone outcrops.

8. **Labichea nitida** Benth., Fl. Austral. 2:293 (1864). Type: Queensland, Burdekin River estuary, *E. Fitzalan s.n.* (MEL 640529 here selected as lecto.).

Shrub to 2 m high, young branchlets with a mixture of short erect uncinate hairs and longer appressed or spreading hairs up to 0.75 mm long. *Leaves* digitately (3)5(7)-foliolate, the central leaflet largest; leaflets elliptic-oblong, narrow-oblong or obovate-oblong, discolorous, upper surface often shiny, sparingly to densely clothed with uncinate hairs, margins thickened and sometimes slightly revolute, lower surface glabrous throughout, with scattered uncinate hairs on the midrib or throughout or with uncinate and longer appressed hairs on the midrib, petiolules glabrous or with scattered uncinate or short appressed or spreading hairs; central leaflet 1.5-4.4 cm long including a pungent tip up to 4 mm long, 0.2-1.2 cm wide; lateral leaflets 0.6-3.3 cm long including a pungent tip up to 0.3 mm long, 0.2-0.9 cm wide. *Stipules* triangular, up to 2.5 x 1.5 mm, deciduous or a few persisting for some time. *Racemes* 2-7-flowered, shorter or longer than the leaves, with short erect uncinate hairs or a mixture of uncinate and appressed or spreading hairs up to 0.5 mm long; bracts narrow-ovate, up to 3.5 mm long, glabrous or sparsely clothed with erect or uncinate hairs, deciduous. *Pedicels* 3-10 mm long, with short erect uncinate hairs or a mixture of uncinate and longer appressed or spreading hairs up to 0.25 mm long. *Sepals* 5, the 2 outer 8.6-11 x 3.2-4.2 mm, acute apically, usually with short uncinate hairs and appressed or spreading hairs up to 0.5 mm long, occasionally subglabrous, inner 3 sepals 6.8-9.5 x (1.5)2-4 mm.

Table 1. Diagnostic differences between *Labichea nitida* and *L. saxicola*.

	L. nitida	L. saxicola
indumentum of young branchlets	mixture of short erect uncinate hairs and longer appressed or spreading hairs up to 0.75 mm long	mixture of short erect or appressed hairs (not uncinate) and scattered appressed or spreading villous hairs up to 2 mm long
indumentum of leaflets	upper surface sparingly to densely clothed with uncinate hairs; lower surface glabrous throughout, with scattered uncinate hairs on midrib or throughout, or with uncinate and appressed long and short hairs on the midrib	upper surface densely clothed with erect uncinate hairs; lower surface densely clothed with appressed white hairs up to 2 mm long especially on the midrib (rarely a few uncinate hairs present)
indumentum of petiolules	glabrous or with scattered uncinate or short appressed or spreading hairs	densely clothed with appressed or spreading hairs up to 1.2 mm long
indumentum of racemes	short erect uncinate hairs or a mixture of uncinate and appressed or spreading hairs up to 0.25 mm long	mixture of short and long appressed or spreading hairs (not uncinate) up to 1.5 mm long
indumentum of pedicels	short erect uncinate hairs or a mixture of uncinate and longer appressed or spreading hairs up to 0.25 mm long	mixture of short and long appressed and spreading hairs (not uncinate) up to 1.2 mm long
indumentum of bracts	glabrous or sparsely clothed with erect or uncinate hairs	densely clothed with short and long appressed hairs
number of sepals	5	4
indumentum of sepals	short uncinate hairs and appressed or spreading hairs up to 0.5 mm long or occasionally subglabrous	mixture of short erect uncinate hairs and longer appressed or spreading hairs up to 1.5 mm long
number of ovules	(rarely 2) 3 — 4	2 (rarely 3)

Petals 4(5), 7.6-13 x 5-11 mm. *Stamens* unequal, one anther much longer than the other, filaments 0.5-1 mm long; short anther 4.3-5.5 mm long, long anther 6.8-7.2 mm long. *Ovary* 3.5-4.5 mm long, (2)3-4-ovulate, densely villous. *Pods* obliquely elliptic-oblong, narrowed to an acute beak, 2-3 x 0.9-1.5 cm, clothed with short erect uncinate hairs and longer scattered appressed or spreading hairs. *Seeds* 4.5-6 x 3.3-4 mm, the testa marked with longitudinal rows of glandular dots.

Confined to the coastal area of north-eastern Queensland from the vicinity of Bowen northwards and common on Hinchinbrook Island (Fig. 3). Recorded from coastal dunes, dry scrub, open woodland, exposed rocky outcrops and gravel beds in riparian vegetation subject to periodic flooding.

Representative Specimens (total number examined, 17):

Queensland — Cook Distr., Cape York Peninsula, Brown's Creek, Pascoe River, 14.vii.1948, *L. J. Brass 19566* (BRI 2228, CANB 186232). North Kennedy Distr., 2 km S. of Station Creek, Cape Upstart, 9.iv.1975, *T. J. McDonald & G. N. Batianoff 1421* (BRI 206043). Walsh River-Channel rd., 31.v.1971, *B. P. M. Hyland 5053* (BRI 159461). Hinchinbrook Island, Little Ramsay Bay, 11.viii.1975, *P. Sharp 1598* (BRI 196611).

Notes:

Bentham based his description of *L. nitida* on two specimens, one labelled as having been collected by Bynoe from Victoria River, Northern Territory, and the other collected on the Burdekin Expedition in Queensland. The former syntype is housed in K and the latter in MEL and the specimens agree in all essential respects. Apart from the Bynoe specimen allegedly from the Victoria River, Northern Territory, *L. nitida* is known only from the coastal areas of north-eastern Queensland. As the alleged Northern Territory occurrence is separated so widely from the Queensland populations, and as the Bynoe specimen matches other material from the Queensland populations so closely, it seems questionable whether the Bynoe specimen was in fact collected in the Northern Territory and raises the possibility that the label does not belong with the specimen. To obviate any

confusion, the specimen housed in MEL (MEL 640529) collected by E. Fitzalan on the Burdekin Expedition is selected here as the lectotype.

Bentham described the flowers as having 5 petals but all of the flowers that I have dissected had 4 petals.

L. nitida is allied to *L. saxicola* and the differences between the two are discussed under the latter. *L. rupestris* differs in having the stamens more or less equal in length.

9. **Labichea lanceolata** Benth. in Huegel Enum. 41 (1837); Benth., Fl. Austral. 2:293 (1864). PROBABLE SYNTYPES: Western Australia, King George Sound, *Huegel s.n.* (W!); Swan River, *Huegel s.n.* (W!).

Shrub to 4 m high, sometimes wider than high, young branchlets glabrous or with short erect uncinate, appressed or spreading hairs, often flattened apically. *Leaves* unifoliolate or digitately 3-6-foliolate and then the central leaflet largest and the leaves sessile or almost so; leaflets coriaceous, upper surface usually glabrous, margins thickened, often slightly revolute and with tubercular-based uncinate hairs, lower surface glabrous or with scattered appressed hairs or erect uncinate hairs; central or solitary leaflet narrow-oblong to elliptic-oblong (rarely obovate-oblong), 1.1-12 cm long including a pungent tip up to 0.3 cm long, 0.2-2(2.5) cm wide, on a petiolule up to 0.7 cm long; lateral leaflets elliptic or elliptic-oblong, 0.6-1.7 cm long including a pungent tip up to 0.25 cm long, 0.175-0.5 cm wide, subsessile or shortly petiolulate. *Stipules* broadly triangular, up to 2.5 x 1.5 mm, deciduous. *Racemes* 2-12-flowered, shorter or longer than the leaves, usually glabrous or with appressed hairs, erect uncinate hairs or a mixture of both; bracts ovate, up to 2 x 1.5 mm, deciduous. *Pedicels* 5-9.5 mm long, usually glabrous or with appressed hairs, erect uncinate hairs or a mixture of both. *Sepals* 4 (rarely 5), the 2 outer 8.8-12 x 3-5 mm, acute apically, usually with short uncinate or appressed hairs, the latter often dark purplish or black, inner 2(3) sepals 5-10.2 x 2-4.5 mm. *Petals* 4, 9-16 x 7-15 mm. *Stamens* unequal, one anther much longer than the other, filaments 0.5-1 mm long; short anther 4.5-5.5 mm long, long anther 7.5-9.5 mm long. *Ovary* 4-5 mm long, 2-ovulate, densely villous, the hairs white, ferruginous or black. *Pods* obliquely elliptic-oblong, narrowed to an acute beak, 2.5-4 x 0.8-1.1 cm, clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seeds* 5-6.5 x 3.7-4.5 mm, the testa marked with longitudinal rows of glandular dots (Fig. 6).

L. lanceolata is the most widely distributed species in the genus occurring in Western Australia from near the mouth of the Murchison River in the north southwards and south-eastwards to Israelite Bay (Fig. 7).

The variation within this species falls into two groups, one consisting of plants with unifoliolate or 3-foliolate leaves and the other of plants with 4-6-foliolate leaves. The two groups tend to have different distributional ranges and are accorded subspecific status.

KEY TO SUBSPECIES

Leaves unifoliolate or 3-foliolate, the central or solitary leaflet (2.3)4-12 cm long, (0.4)0.8-1.5(2) cm wide..... subsp. *lanceolata*

Leaves (3)4-6-foliolate, the central leaflet 1.1-6 cm long, 0.2-1 cm wide ..... subsp. *brevifolia*

L. lanceolata subsp. **lanceolata**

L. lanceolata Benth. in Huegel Enum. 41 (1837); Benth., Fl. Austral. 2:293 (1864) pro parte. SYNTYPES as above.

L. bipunctata Paxton, Mag. Bot. 10:149-50 (1843). TYPE: Paxton, l.c. (iconotype).

L. diversifolia Meissner var. *longifolia* Meissner in Lehm., Pl. Preiss. 1:23 (1844). TYPE: Western Australia, near Swan River, *Drummond* coll. 1 in Herb. Shuttleworth (BM, here selected as lecto.).

Leaves unifoliolate or 3-foliolate; the central or solitary leaflet (2.3)4-12 cm long, (0.4)0.8-1.5(2) cm wide; lateral leaflets 0.8-1.7 cm long, 0.3-0.5 cm wide.

Occurs in the northern sandplain and heath from the Murchison River southwards to the Jarrah forest of the Darling Range and Canning River south-east of Perth. Recorded

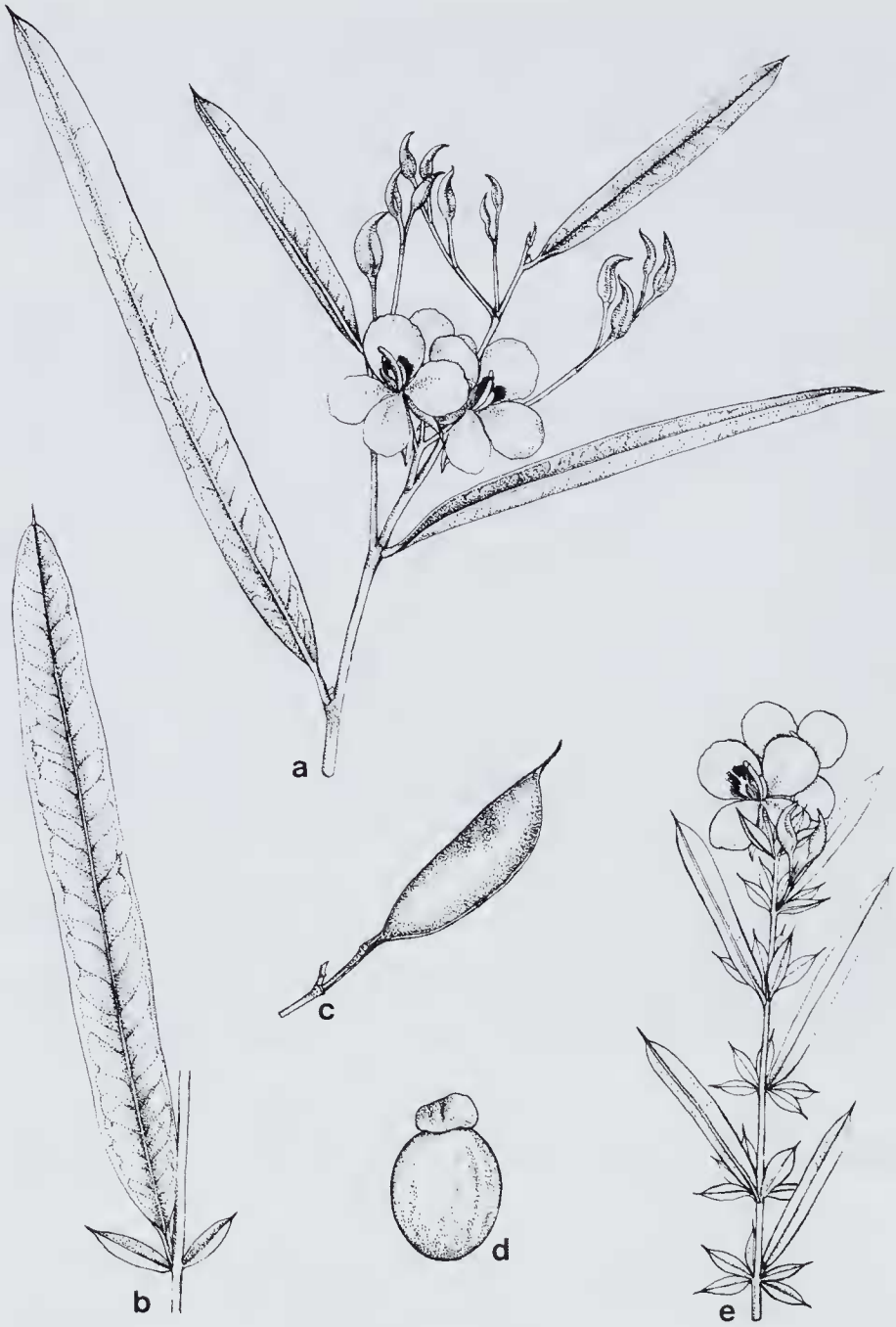

Fig. 6. *Labichea lanceolata* subsp. *lanceolata*. a — flowering twig, x 1. b — trifoliolate leaf, x 1. c — pod, x 1. d — seed, x 3. *L. lanceolata* subsp. *brevifolia*. e — flowering twig, x 1. a from *M. G. Corrick 8088* (MEL 614947); b from *M. G. Corrick 8216* (MEL 614919); c & d from *F. Mueller s.n.* (MEL 626642); e from *M. G. Corrick 7668* (MEL 605109).

from a variety of habitats including sandy soils or silt along creeks or rivers, rocky creek banks, granite outcrops, stony hillsides, lateritic or granitic soils.

REPRESENTATIVE SPECIMENS (total number examined, 76):
Western Australia — Kalbarri National Park, above Murchison River at Z Bend, 24.ix.1982, *M. G. Corrick 8216* (MEL 614949). Arrowsmith River, near Drummond's Crossing, N of Eneabba, 20.ix.1982, *M. G. Corrick 8088* (MEL 614947). 18 km W. of Northampton on Port Gregory Road, 21.viii.1982, *C. E. Woolcock s.n.* (MEL 627872). Dongara, x.1898, *R. Helms s.n.* (PERTH). Sources of the Swan River, 1889, *J. Sewell s.n.* (MEL 626646). Kelmscott, Canning River, 10.ix.1898, *R. Helms s.n.* (PERTH).

NOTES:
Bentham based his description of *L. lanceolata* on Huegel specimens allegedly collected from "King Georges Sound et Swan-River." I have not succeeded in locating type material labelled as having been collected by Huegel but two specimens in W labelled King Georges Sound and Swan River respectively, without any indication of the collector or date of collection, are probably syntypes. The specimens agree well with Bentham's comprehensive description of *L. lanceolata* which leaves no doubt about the correct application of this name. Typical *L. lanceolata* has not been recorded within several hundred kilometres of King George Sound so it appears likely that the Huegel specimen cited by Bentham was collected further north and not at King George Sound as alleged.

Meissner, when describing *L. diversifolia* in Lehm., Pl. Preiss. 1:23 (1844), recognized two varieties which he named var. *longifolia* and var. *brevifolia*. Var. *longifolia* is the typical variety of *L. diversifolia* and the species is lectotypified by the Drummond collection from near Swan River in Herb. Shuttleworth housed in BM.

The leaves in subsp. *lanceolata* are either unifoliolate or trifoliolate; in the latter instance the lateral leaflets are disproportionately smaller than the central leaflet. Unifoliolate specimens are found throughout the distributional range of subsp. *lanceolata* but tend to occur more frequently in the north.

Most specimens can be referred readily either to subsp. *lanceolata* or to subsp. *brevifolia*. However, occasional specimens, for example *C. E. Woolcock s.n.* (MEL 627871) from 5.5 km from Toodyay and *E. Pritzel 554* (AD, W) from the Avon district, are difficult to place with certainty. These specimens are atypical in having some 4-foliolate leaves as in subsp. *brevifolia* but, as they have the general facies of subsp. *lanceolata* with the central leaflet very much larger than the laterals, they are referred to subsp. *lanceolata*.

Subsp. *lanceolata* usually grows as a fairly large open shrub whereas subsp. *brevifolia* tends to be dense and more intricately branched.

L. lanceolata subsp. **brevifolia** (Meissner) J. H. Ross, comb. et stat. nov.
L. diversifolia Meissner var. *brevifolia* Meissner in Lehm., Pl. Preiss. 1:23 (1844). TYPE: Western Australia, "Montis Bakewell .... et ad fluv. Canning", *Preiss 1027* (LD, here selected as lecto., MEL 626657, MEL 626658, NY, isolecto.).
L. diversifolia sensu Lindley & Paxton, Fl. Gard. 2:t. 52 (1851).
L. lanceolata Benth., Fl. Austral. 2:293 (1864) pro parte excl. specim. Huegel.

Leaves (3-)4-6-foliolate; the central leaflet 1.1-6 cm long, 0.2-1 cm wide; lateral leaflets 0.6-1.5 cm long, 0.175-0.5 cm wide.

Occurs mainly from the Darling Range east and south-east of Perth inland to the vicinity of Kellerberrin (with outliers further north) and south-eastwards to Israelite Bay and some of the islands of the Recherche Archipelago. Recorded from a variety of habitats including the sandy soil of creek beds, granite outcrops, sandy loam, granitic soil and coastal heath.

REPRESENTATIVE SPECIMENS (total number examined, 91):
Western Australia — Kellerberrin, ix.1897, *R. B. Leake s.n.* (PERTH). Mt Bakewell, 24.ix.1961, *A. S. George 3050* (PERTH). Avondale Research Station, 6 km W. of Beverley, 22.x.1979, *R. J. Hnatiuk 790185* (PERTH). Pingelly, 27.x.1921, *C. A. Gardner 1017* (PERTH). Near John's Cove, Bremer Bay, 2.x.1981, *M. G. Corrick 7668* (MEL 605109). Young River crossing ca. 5 km N. of Neds Corner, 27.ix.1968, *N. N. Donner 2810* (AD 97118044, PERTH). Tagon Harbour, Cape Arid National Park, 3.xii.1971, *R. D. Royce 10043* (PERTH). Recherche Archipelago, Sandy Hook Island, 10.xi.1950, *J. H. Willis s.n.* (MEL 626654).

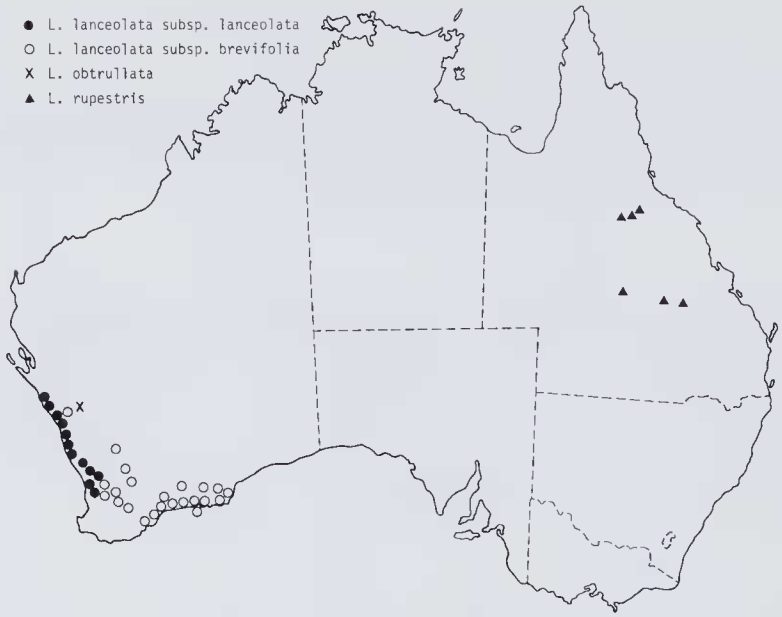

Fig. 7. The known distributions of *Labichea lanceolata*, *L. obtrullata* and *L. rupestris*.

NOTES:

L. diversifolia Meissner var. *brevifolia* Meissner was based on two Preiss collections numbered 1027 which were cited in the protologue as follows: "Inter fragmenta rupium (Quartz) ad latus occidentale montis Bakewell (York) et in rupestribus as fluv. Canning (Darling's Range) d. 8 Sept. 1839 et M. Jul. 1841. Herb. Preiss. No. 1027". Specimens of *Preiss 1027* housed in LD, MEL, NY and W have been examined: there are none at K. The specimen labelled *Preiss 1027* in W is referrable to *L. lanceolata* subsp. *lanceolata:* the specimen does not belong with the label which has Huegel's printed name crossed out and substituted with Preiss's and an abbreviated version of the locality data cited in the protologue. The specimen in LD is accompanied by a label in Preiss's hand, one of the MEL sheets (MEL 626657) is from Steetz's herbarium and the other MEL sheet (MEL 626658) is from Lehmann's herbarium. The label on the NY specimen is not in Meissner's hand and there is no obvious evidence to suggest that it formed part of Meissner's herbarium. The MEL sheet from Steetz's herbarium bears the locality Canning River, the MEL sheet from Lehmann's herbarium has a reference to the protologue, and the labels of the specimens in LD and NY have both Mt Bakewell and Canning River as given in the protologue and there is no means of knowing from which of the two localities the specimens came. I now select the sheet of *Preiss 1027* in LD as the lectotype of *L. diversifolia* var. *brevifolia*.

In subsp. *brevifolia* some leaves are occasionally 3-foliolate but these are always accompanied by leaves with 4-6 leaflets.

Four specimens from outlying localities north of the main distributional range of subsp. *brevifolia* have narrower leaflets than usual and a somewhat different facies as a consequence. The specimens in question are *A. C. Burns 98* (PERTH) from East Yuna which is separated apparently from other populations by a large geographical discontinuity, *C. A. Gardner 12149* (PERTH) from Ninghan, *C. A. Gardner 12126* (PERTH) from Waddourin Hill and *W. E. Blackall 3400* (PERTH) from south of Bencubbin. Although atypical, for the present the specimens are referred to subsp. *brevifolia* pending further investigation.

10. **Labichea obtrullata** J. H. Ross, sp. nov.

Species nova L. lanceolatae Benth. affinis, a qua foliis semper 3-foliolatis cum foliolis lateralibus plerumque late obtrullatis differt.

TYPE: Western Australia, Gabyon Station, W. of Yalgoo, Oct. 1963, *D. W. Goodall s.n.* (PERTH, holo.).

Shrub (?), young branchlets slightly flattened apically, glabrous or sparingly clothed with short erect uncinate hairs and longer appressed to slightly spreading hairs. *Leaves* digitately 3-foliolate, the central leaflet longest, distinctly petiolate: petiole 0.2-0.55 cm long, glabrous or sparingly clothed with uncinate and/or appressed hairs; leaflets coriaceous, upper surface with scattered uncinate hairs or glabrous, lower surface with scattered uncinate hairs and/or appressed hairs especially on the margins and midrib; central leaflet petiolulate, elliptic- or narrow-oblong, 3.3-7.5 cm long including the pungent tip, 0.75-1 cm wide; lateral leaflets sessile, very variable in shape, mostly ± very broadly obtrullate (up to 3.8 cm long and 2.2 cm wide), the three angles terminating in pungent points, sometimes with 4 points or ± obreniform with 2 pungent points, occasionally narrow-elliptic (up to 0.8 cm long and 0.25 cm wide) with a pungent tip. *Stipules* narrow-triangular, 1.25-2 x 0.8-1.25 mm, deciduous. *Racemes* 3-7-flowered, longer than the leaves; bracts ovate, up to 1.75 x 1.25 mm, pubescent, deciduous. *Pedicels* 4-7 mm long, with short erect uncinate hairs and longer usually dark scattered appressed hairs. *Sepals* 4 or 5, the 2 outer 9-12.5 x 3-4 mm, clothed with short erect uncinate hairs and longer dark appressed hairs, the inner 2(3) sepals (4.5)6-10.5 x (1.4)2.75-4.5 mm. *Petals* 4, 7.5-11 x 5.8 mm. *Stamens* unequal, one anther much longer than the other; filaments 0.5-0.75 mm long; short anther 4-5 mm long, long anther 5.3-8.5 mm long. *Ovary* up to 3 mm long, 2-ovulate, densely clothed with short erect uncinate hairs and longer dark appressed hairs. *Pods* and *seeds* unknown (Fig. 8).

Known only from two rather poor specimens, one of which is sterile, from Gabyon Station, west of Yalgoo, Western Australia (Fig. 7). Ecological preferences and conservation status unknown.

SPECIMEN EXAMINED:
Western Australia — Gabyon Station, 15.vi.1962, *D. G. Wilcox s.n.* (PERTH).

NOTES:
Allied to *L. lanceolata* but readily distinguished from it by the distinctive lateral leaflets which are mostly ± very broadly obtrullate. The lateral leaflets exhibit some variation in shape and occasionally have four pungent points instead of three, are ± obreniform with two pungent points, or are simply narrow-elliptic. The ± broadly obtrullate or ± obreniform lateral leaflets appear to have arisen by the lateral fusion of individual elliptic leaflets.

An attempt to locate *L. obtrullata* during the spring of 1982 was unsuccessful largely owing to the lack of a precise locality on the vast Gabyon Station from which the two previous collections were taken. *L. obtrullata* appears to have a very restricted distribution.

More material, especially fruiting material, is desired.

11. **Labichea rupestris** Benth. in Mitch. J. Exped. Trop. Australia 342 (1848); Fl. Austral. 2:293 (1864) pro parte excl. syn. *L. digitata*. TYPE: Queensland, 24°03′ S, 144°42′ E, 24 Sept. 1846, *T. L. Mitchell 307* (K, lecto, CGE isolecto.).

Shrub to 1.5 m high, young branchlets usually clothed with a mixture of short erect uncinate hairs and appressed or slightly spreading hairs up to 0.6 mm long. *Leaves* digitately 3-5-foliolate, subsessile, the central leaflet of each leaf disproportionately larger than the others; leaflets narrow-oblong to narrow-elliptic or narrow-obovate-oblong, petiolulate, discolorous, reticulately veined, upper surface with numerous tubercular-based erect or uncinate hairs, lower surface usually with scattered long appressed hairs especially on the midrib and sometimes with short tubercular-based erect or uncinate hairs; central leaflet 2.5-9 cm long including a pungent tip up to 0.3 cm long, 0.3-0.7 cm wide; lateral leaflets 0.7-4 cm long, 0.3-0.6 cm wide. *Stipules* narrow-triangular, 1.2-2.5 mm long, 0.7-1 mm wide, deciduous. *Racemes* 3-18-flowered, mostly shorter than the leaves, densely clothed with appressed-decumbent hairs; bracts ovate, up to 1.5 x 1 mm, deciduous. *Pedicels* up to 4 mm long, pubescent. *Sepals* 4 (rarely 5), the 2 outer 4.8-6.9 x 2-2.9 mm, acute apically, sparingly to densely clothed with short erect uncinate hairs and longer appressed straight hairs, the inner 2 (3) sepals 4-6.5 x (1.5)2-2.8 mm. *Petals* 4 (rarely 5), 3.2-6.5 x (0.8)1.8-5 mm (an occasional

Fig. 8. *Labichea obtrullata*. a — flowering twig, x 1. b — portion of vegetative twig showing some of the variation in the lateral leaflets, x 1. c — flower, x 3. d — stamens and gynoecium, x 6. a, c & d from *D. W. Goodall s.n.* (PERTH); b from *D. G. Wilcox s.n.* (PERTH).

flower has a linear appendage up to 0.4 x 0.1 mm at the base of the ovary). *Stamens* almost equal in length, filaments 0.4-0.6 mm long; anthers 2.5-4.5 mm long. *Ovary* 2.5-3.5 mm long, 2-ovulate, densely villous. *Pods* obliquely elliptic-oblong, 2-2.8 x 1-1.4 cm, narrowed to an acute beak apically, clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seeds* 5-6 mm long, 3.5-4 mm wide, 2.5-2.8 mm thick.

Confined to east-central Queensland where apparently it has a disjunct distribution being recorded from between Hughenden and Charters Towers in the north and from north-west of Blackall to north-east of Rolleston in the south (Fig. 7). The ecological preferences are not clear but the species is reported to occur on sandstone, among rocks and on creek banks in open woodland and scrub.

REPRESENTATIVE SPECIMENS (total number examined, 9):
Queensland — Torrens Creek, 19.iii.1933, *C. T. White 8684* (BRI 285091). Warrigal Creek, 27 km W. of Pentland on Townsville — Mt Isa rd., 17.iii.1980, *R. H. Rebgetz 385* (BRI 254083). Cape River, *Bowman s.n.* (MEL 616544). Planet Creek, 48 km NE. of Rolleston Township, 30.ix.1962, *Story & Yapp 306* (CANB 115546, MEL 616543, NSW).

NOTES:
The first mention of *L. rupestris* in Mitchell's journal is on 6 Oct. 1846 and the protologue appears in a footnote on p. 342. On 6 October Mitchell travelled from NW. of Mt Pluto eastwards towards Mt Salvator to his camp of the Pyramids (roughly 25°S, 147° 20′ E).

I have not seen a specimen dated 6 Oct. collected by Mitchell but undated specimens are present in CGE and K. The only Mitchell specimen of *L. rupestris* bearing a date that I have examined is number 307 collected on 24 Sept. when he was considerably further west (24°03′ S, 144°42′ E) than he was on 6 Oct. when the species was described in his journal. Although Mitchell does not mention in his journal having seen *L. rupestris* on 24 September, specimen no. 307 in K collected on 24 Sept. 1846 is selected here from among the specimens collected by Mitchell as the lectotype of *L. rupestris.*

Bentham, Fl. Austral. 2:293 (1846), considered *L. rupestris* and *L. digitata* to be conspecific but the two species are distinct and the differences are listed in Table 2.

12. **Labichea digitata** Benth. in Mitch. J. Exped. Trop. Australia 273 (1848). TYPE: Queensland, ± 24°52′ S, 146°42′ E, 14 Sept. 1846, *T. L. Mitchell 351* (K, lecto, CGE isolecto).

L. rupestris sensu Benth., Fl. Austral. 2:293 (1864) pro parte quoad syn. *L. digitata,* non sensu stricto.

Shrub to 1 m high, young branchlets usually densely clothed with spreading hairs up to 0.6 mm long, rarely the hairs somewhat appressed. *Leaves* digitately 5(7)-foliolate, on petioles up to 1.5 mm long, leaflets of each leaf roughly the same size, the central one not

Table 2. Diagnostic differences between *Labichea rupestris* and *L. digitata.*

	L. rupestris	L. digitata
young branchlets	usually clothed with a mixture of short erect uncinate hairs and longer appressed or slightly spreading hairs	usually densely clothed with spreading hairs, rarely the hairs somewhat appressed
leaves	subsessile; 3-5-foliolate	on petioles up to 1.5 mm long; 5(7)-foliolate
leaflets	the central leaflet of each leaf disproportionately larger than the others; central leaflets 2.5-9 cm long, 0.3-0.7 cm wide	the central leaflet of each leaf not disproportionately larger than the others, the leaflets roughly the same size, 1.2-3 cm long, 0.2-0.35 cm wide
bracts	up to 1.5 x 1 mm	2.5-6 x 2.25-7 mm, conspicuously longitudinally striate
pods	obliquely elliptic-oblong, 2-2.8 cm long, 1-1.4 cm wide	obliquely ovate, 1.4-1.7 cm long, 0.7-0.9 cm wide

disproportionately larger than the others as in *L. rupestris;* leaflets narrow-elliptic, 1.2-3 cm long including the pungent tip up to 3 mm long, 0.2-0.35 cm wide, subsessile, discolorous, prominently reticulately veined, upper surface with scattered tubercular-based uncinate hairs, lower surface usually with scattered appressed hairs especially on the midrib and sometimes with short tubercular-based uncinate hairs. *Stipules* narrow-triangular, up to 1.5 x 0.75 mm, deciduous. *Racemes* 2-9-flowered, mostly shorter than the leaves, densely clothed with rusty appressed hairs; bracts broadly ovate, 2.5-6 mm long, 2.25-7 mm wide; conspicuously longitudinally striate, usually with marginal cilia and rusty appressed hairs along the midrib. *Pedicels* up to 1.5 mm long, rusty appressed-pubescent. *Sepals* 4, the 2 outer 5-6.5 x 1.9-2.5 mm, densely clothed with appressed rusty hairs and scattered short erect uncinate hairs, the 2 inner sepals 4-6 x 1.8-2.7 mm. *Petals* 4 (seldom 5), 3.8-6.6 x (1)1.7-5.5 mm (an occasional flower has one or two linear appendages at the base of the ovary). *Stamens* almost equal in length, filaments 0.5-0.75 mm long; anthers 2.7-4 mm long. *Ovary* up to 2.5 mm long, 2-ovulate, densely villous. *Pods* obliquely ovate, 1.4-1.7 x 0.7-0.9 cm, narrowed to an acute beak apically, clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seeds* (immature) 5 x 3 mm.

Confined to south-eastern Queensland where apparently it has a disjunct distribution being recorded from the vicinity of Mt Pluto and Mt Playfair in the north and Miles and Chinchilla in the south (Fig. 9). The ecological preferences are not clear but the species has been recorded growing on gravelly clay loam and sandy loam overlaying sandstone in open forest.

Representative Specimens (total number examined, 15):

Queensland — Mt. Playfair, 1890, *Mrs Biddulph s.n.* (MEL 616541). Nogoa River, 16 km E. of Mt. Playfair, vii.1966, *C.H. Gittins 1148* (BRI 64469). 4 km S. of Miles, 4.ix.1973, *G.W. Trapnell & K.A. Williams 327* (BRI 192541). 6.1 km NNW of Chinchilla towards Auburn, 29.viii.1975, *R. Coveny 6805 & P. Hind* (BRI 217190, NSW).

Notes:

The first mention of *L. digitata* in Mitchell's journal is on 11 Aug. 1846 when he was at approximately 22°S, 147°E, and the protologue appears in a footnote on p. 273. *L. digitata* is mentioned subsequently on pp. 339 and 340 on 6 Oct. when Mitchell was east

Fig. 9. The known distributions of *Labichea digitata, L. punctata* and *L. stellata.*

of Mt Pluto. The reference on p. 339 is to *L. digitata* being in fruit and presumably this is when *Mitchell 381* was collected although the specimen in CGE bears the date "Oct. 5". The K sheet, in contrast, has the date "Oct. 5" crossed out.

Apart from the reference to *L. digitata* on 6 October when Mitchell travelled from NW. of Mt Pluto to the camp of the Pyramids (roughly 25°S, 147°20′ E), the only Mitchell specimens seen bearing dates are number 300 in K dated "Aug." and number 351 in CGE and K dated "Sept. 14". Mitchell does not mention in his journal having seen *L. digitata* on 14 September when he travelled westward from "The Gap" (24°52′ S, 146°42′ E) and was at least 100 km further west than he was on 6 October. A third Mitchell specimen in CGE and K carries neither date nor number. Specimen no. 351 in K collected on 14 Sept. 1846 and carrying the comment "Foot of rocks in sheltered ravine" is selected here from among the specimens collected by Mitchell as the lectotype of *L. digitata*.

Mitchell's first mention of *L. digitata* on 11 Aug. is from a locality which is much further north than the other known occurrences of the species and confirmation of the existence of the species so far north is required.

One of the flowers of *Mitchell 351* dissected had 5 petals, the fifth being oblong and 4.7 x 1 mm. In other flowers on this specimen one or two linear filaments up to 0.9 x 0.2 mm were found at the base of the ovary.

L. digitata is allied most closely to *L. stellata* from south-western Western Australia and *L. rupestris* from Queensland. The characters that distinguish *L. digitata* from each are given under *L. stellata* and *L. rupestris* respectively.

13. **Labichea stellata** J. H. Ross, sp. nov.

Species nova L. digitatae Benth. affinis, a qua pilis ad 1.75 mm longis in ramulis juvenilibus, petiolis, et saepe costis paginae inferioris; foliis manifeste subdigitatis petiolatis; foliolorum forma; et floribus cum 5 sepalibus, differt.

Type: Western Australia, c. 30 km N. of Hyden along road to Narembeen, 13.ix.1982, *P. S. Short 1724c* (MEL 629305, holo.; K, PERTH, iso.).

Shrub to 1 m high, often wider than high; young branchlets clothed with spreading hairs up to 1.5 mm long and scattered shorter erect uncinate hairs. *Leaves* sub-digitately 5(7)-foliolate, petiolate, the 2 lower leaflets inserted just below the others, the leaflets of each leaf ± the same size; petiole 1-5 mm long, sparingly to densely clothed with spreading hairs and scattered shorter erect uncinate hairs; leaflets narrow-elliptic, 0.7-2.2 cm long including the pungent tip up to 3 mm long, 0.2-0.5 cm wide, sessile, margins revolute, upper surface with scattered tubercular-based uncinate hairs, lower surface glabrous except for scattered hairs up to 1.75 mm long on the midrib and sometimes on the margins. *Stipules* ovate, 3-4 mm long, 1-2.2 mm wide, tardily deciduous. *Racemes* 3-9-flowered, pendulous, longer than the leaves, densely clothed with short spreading uncinate hairs; bracts ovate, 3-4.5 x 2.75-3.5 mm, with scattered uncinate hairs, deciduous. *Pedicels* up to 2 mm long, with short erect uncinate hairs. *Sepals* 5, the outer ones 4.5-7 x 1.5-2.8 mm, acute apically, sparsely clothed with short erect uncinate hairs, the inner sepals 4.5-5.5 x 1-1.8 mm. *Petals* 4, unequal and one sometimes ± oblong, 3.3-6 x 1.5-6 mm. *Stamens* ± equal in length, filaments 0.5-0.75 mm long; anthers 3.2-4.5 mm long, with apical pores. *Ovary* up to 2.5 mm long, 2-ovulate, densely clothed with short uncinate hairs and long villous hairs. *Pods* (only immature pods seen) obliquely oblong-elliptic, 1.1-1.5 x 0.6-0.7 cm, narrowed to an acute beak apically, densely clothed with short erect uncinate hairs and scattered longer hairs (Fig. 10).

Confined to south-western Western Australia where it occurs from the vicinity of Koonadgin in the north southwards to Hyden, south-westward to Lake Grace, and eastward to North Ironcap and Middle Ironcap (Fig. 9). Recorded growing in crevices between ironstone boulders on exposed slopes in low heath or with mallee *Eucalyptus-Acacia-Casuarina*-Proteaceae-Myrtaceae shrubs, and in laterite and coarse sandy loam in disturbed roadside localities. Apparently a coloniser of disturbed sites.

Representative Specimens (total number examined, 18):

Western Australia — 6.69 km (4.18 miles) from Koonadgin on the road to Korbel, 16.xi.1983, *B. H. Smith 308* (MEL 650838). Eastern face of North Ironcap, 12.ix.1982, *P. S. Short 1700a* (CANB, MEL 629307, PERTH).

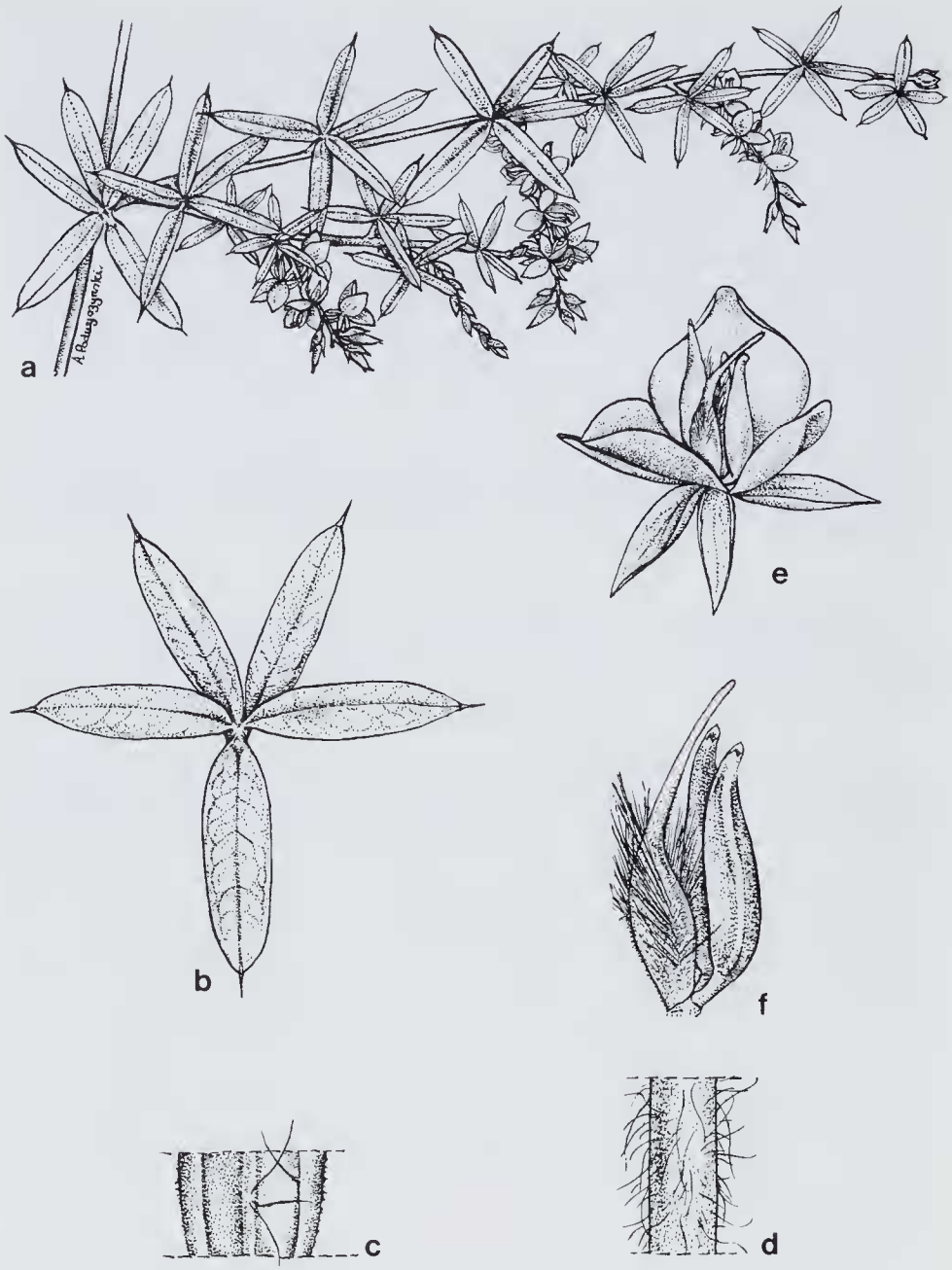

Fig. 10. *Labichea stellata*. a — flowering twig showing pendulous inflorescences, x 1. b — leaf, x 2. c — portion of lower leaflet surface showing scattered long hairs on the midrib and margin, x 6. d — portion of young stem showing spreading hairs, x 6. e — flower, x 4. f — stamens and gynoecium, x 8. All from *P. S. Short 1724c* (MEL 629305).

Middle Ironcap, 12.x.1976, *G. J. Keighery 896* (KINGS PARK). Lake Grace district, 22.ix.1967, *P. Nelson s.n.* (PERTH). S. of Lake Grace, 8.x.1965, *R. D. Royce s.n.* (PERTH).

NOTES:

Allied to *L. digitata* from south-eastern Queensland from which it differs in having flowers with 5 sepals, the young branchlets, shoots, petioles and often the lower surface of the midribs of the leaflets clothed with spreading hairs up to 1.75 mm long, subdigitate leaves, and differently shaped leaflets. The leaflets spread giving the leaves a star-like appearance, whence the specific epithet.

14. **Labichea punctata** Benth. in Lindley, Sketch Veg. Swan Riv. Col. 15 (1839); Benth., Fl. Austral. 2:294 (1864). TYPE: Western Australia, Swan River, *Drummond* (K, here selected as lectotype).

L. punctata var. *lanceolata* Meissner in Lehm., Pl. Preiss. 1:24 (1844). TYPE: Western Australia, near Mahogany Creek, Darling Range, 23 Sept. 1839, *Preiss 1025* (LD, here selected as lecto.; K; MEL 608357, 608358, 608360; W, isolecto.).

Shrub or *subshrub* to 1 m high, stems simple or sparingly branched, erect or prostrate, flattened apically, glabrous to fairly densely clothed with appressed and uncinate hairs. *Leaves* unifoliolate, linear, narrowly elliptic or ovate, the basal ones sometimes larger than the upper, (1.8)4.5-9(12.5) cm long, (0.3)0.5-1.7(3.1) cm wide, pungent apically, reticulate, with scattered tubercular-based uncinate hairs above and occasionally below, otherwise glabrous or with scattered appressed hairs below especially on the midrib; petiole 0.2-0.4 cm long, sulcate adaxially, wrinkled. Stipules narrowly triangular or subulate, 2.5-5 x 0.7-1 mm, glabrous or sparingly pubescent, usually persisting for some time. *Racemes* 3-many-flowered, usually shorter than the subtending leaf; bracts ovate, 2.5-3.5 x 1.5-3 mm, soon deciduous. *Pedicels* 6-9 mm long, sparingly to densely clothed with uncinate hairs. *Sepals* (4)5, becoming reflexed, the 2 outer ones 6.5-10 x 2.4-3.8 mm, acute apically, sparingly to densely clothed with uncinate and sometimes scattered appressed hairs, the 2(3) inner sepals 6-9 x 2.1-3.5 mm. *Petals* 4, 6-12 x 5-11.5 mm, occasionally sparingly puberulous basally. *Stamens* ± equal in length; filaments 0.6-1 mm long; anthers 3.8-5.5 mm long. *Ovary* 2.5-3.5 mm long, densely villous; *style* 3 mm long. *Pods* obliquely oblong-elliptic, 2.3-3.3 x 0.9-1.4 cm, narrowed to an acute beak apically, densely clothed with short erect uncinate hairs and longer scattered appressed hairs. *Seeds* chestnut-brown, 5-5.5 mm long, 3.75-4.5 mm wide, 3-3.5 mm thick. (Fig. 11).

Occurs in heath and woodland on sandy soils of the coastal plain in south-western Western Australia from Cowaramup to Jurien and on sandy and lateritic soils of the Darling Range (Fig. 9).

REPRESENTATIVE SPECIMENS (total number examined, 89):

Western Australia — Bunbury, *Oldfield s.n.* (MEL 607407). Gooseberry Hill, Darling Range, 15.ix.1900, *A. Morrison 10426* (MEL 607419, PERTH). Midland, 17.xii.1973, *H. Demarz 5013* (PERTH). Upper Helena Valley, 18.ix.1977, *J. Seabrook 258* (PERTH). Mt Benia, E. of Jurien, 13.ix.1979, *E. A. Griffin 2214* (PERTH).

NOTES:

No type material was mentioned specifically by Bentham in the protologue of *L. punctata* but it is clear that he had before him flowering material. The unnumbered flowering specimen dated 1839 collected by Drummond at Swan River in Herbarium Benthamianum now at K and bearing the name "Labichea punctata Benth." in Bentham's hand is clearly part of the type material or perhaps the sole specimen upon which Bentham based his description. The undated unnumbered flowering specimen in CGE collected by Drummond at Swan River is possibly part of the type collection. It is not known whether the undated flowering specimens of Drummond 279 in MEL and W, and which are no doubt present in several other herbaria, form part of the type material but this is thought to be unlikely. In order to obviate any confusion, the unnumbered Drummond specimen in K referred to above is selected here as the lectotype of *L. punctata*.

The flowers of *L. punctata* invariably have 5 sepals and not 4 as reported in most literature.

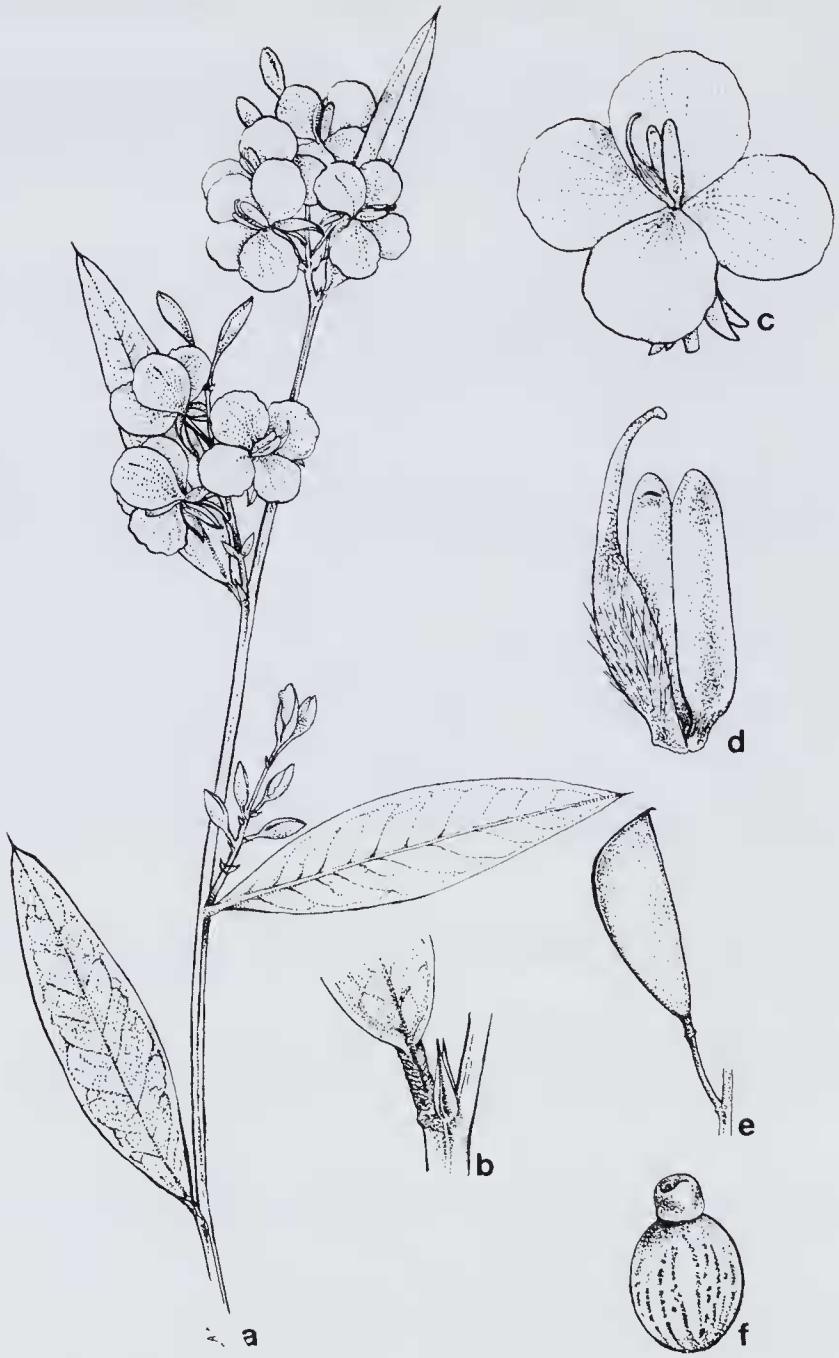

Fig. 11. *Labichea punctata*. a — flowering twig, x 1. b — basal portion of leaf showing attachment to stem and paired stipules, x 3. c — flower, x 2. d — stamens and gynoecium, x 8. e — pod, x 1. f — seed showing the globular aril, x 3. a — d from *J. Seabrook 258* (PERTH); e from *F. Mueller s.n.* (MEL 607410); f from *F. Mueller s.n.* (MEL 607412).

L. lanceolata has been confused with *L. punctata*. *L. punctata* differs from *L. lanceolata* in being a low shrub or subshrub with simple or sparsely branched stems and in having consistently unifoliolate leaves, anthers of ± equal size, and a more restricted range of distribution.

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REFERENCE

Beard, J. S. (1980). A new phytogeographic map of Western Australia. *Western Australian Herb. Res. Notes* 3: 37-58.

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